

AVIATION WEEK

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JAN. 8, 1951

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Double-Flange Socket



Double-Flange Socket

Aviation Week

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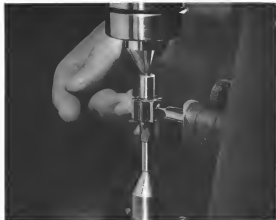
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NEWS DIGEST

DOMESTIC

First modernized B-52B, modified to D standards, has been delivered by Convair San Diego to Strategic Air Command. Added were four G-47 jets and other new equipment.

Shipment of 228 two to 10-place personnel and executive planes was made by 11 companies during November. Total dollar value (including net billing price) for the cargo was \$1,428,000. In October, these manufacturers shipped 213 planes worth \$3,270,000. During November nine companies reported 51 personnel and executive planes valued at \$190,414 compared with 85 planes reported the previous month having a value of \$258,939.

Safekeeping has been established by the Marine to be awarded annually to the Captain Marine Air Reserve fighter squadron with the best safety record for the calendar year. The trophy is established in memory of the late Lt. Joseph F. Ross, Jr., USMCR.

All-weather fighter defense for New York has been activated with housing at Lackland 7-44 two-place radar-equipped planes at McGuire AFB, N. J. The planes and crews are on 24-hour standby alert.

Boring Aircraft launched an all-out B-47 living campaign by offering a total of \$700 to each recruit to the company responsible for the living of the most new recruits held during January and the first half of February.

New international altitude record for gliders, 47,000 ft., was claimed by W. S. Young, Jr., a Convair engineer, by using a pressurized Schweizer sailcraft 1.33. From obtained a stratosphere in the Sierra between Bishop, Calif., and Mt. Whitney.

Air Line Pilots Association will be able to bargain for airline pilots with fast-track bill, known today, they say, under legislation Congress has completed action on. Union claims under the Taft-Hartley act simply have first right the aircraft industry is to control under the Railway Labor Act.

Major Gen. S. R. Beardsall, formerly chief of research and development at Wright Field, has been assigned to direct output of the Douglas B-47 Strategic nuclear bomber. This marked the second time the USAF has placed a

general officer on a single plane project. The first was Gen. R. D. Wolfe's assignment during World War II to lead up the Wright Field project that resulted in the first B-29 mission on Tokyo.

Prof. Emile Allard, died recently in Belgium at the age of 67. A devotee of Belgian Airlines (Sabena), Prof. Allard was one of the passengers who established riding service in the Belgian Congo and later helped Sabena Europe with Sabena Africa. He also had a very active industrial aviation career.

Another four-star general may be added to USAF news. The President's declaration of a national emergency, which the legal limit on the number of top-ranking officials and generals, has not affected his promotion. Lt. Gen. Loren N. Newland, now commander of 17 S. Air Force in Europe and adviser to Gen. Eisenhower, passed USAF's promotion to Joseph McNamara, George Kenney, Earl Winderburne and Nathan Twining, in line for promotion star by reason of security war. Lt. Gen. John Connel, George Stansbury, Deane Whitcomb, Curtis LeMay. Very close to Newland's promotion was Adm. Lynde M. Gordon. He has already been promoted to full admiral.

FINANCIAL

Air Associates, Inc., sales for the fiscal year ended Sept. 30, 1958, were \$6,111,201, and operations resulted in a net profit of \$18,014 after federal income taxes.

Solar Aircraft, Inc. total revenues for the six months ended Oct. 31, 1959 were \$9,143,819, with net income of \$238,904. The firm has ordered orders totaling about \$20 million.

INTERNATIONAL

First flight of England's Bristol 177 two-engine helicopter is expected soon. The craft is powered by two Alvis Leonides engines, has the same rotor as Bristol's already proven 171 and is reportedly already the French HUP.

New Swedish jet engine will be developed by two engineering companies, SFAL and Svenska Flygmotor A. B. The engine will follow the lines of SFAL's earlier 1700 B. thrust engine, but with at least 50 percent greater thrust. It is intended for the lighter now being designed by SABAB to meet the J-29, of which 900 have been ordered by the Swedish air force.

THE CHANNEL ISOLATOR

LETS EACH PILOT CHOOSE HIS OWN INPUT SIGNALS AND USE EITHER SPEAKER OR HEADSET

Individual speaker operation for pilot and copilot.

- Also Provides an Control
- 10-Channel Selection for Each Pilot
- Individual Speaker Operation

The ARC multi channel isolator permits two pilots to select to input channels in any combination, independently of each other — without cross-coupling interference. Radio function can be degraded so that each pilot works at peak efficiency in complex navigation and communication situations. A flick of a switch changes from headphones to speaker — without discomfort and pilot fatigue. Write for the details.

TYPE F-11 Isolation Amplifier

CAE No. 184-1 Weight 8 lbs.
 GMA Type G-1000, immediate delivery in 14 or 28 volt DC models

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CHICAGO AND SOUTHERN AIRLINES



► Seventeen years ago, Pacific Southwest Air Lines—now Chicago and Southern Airlines—was flying the "link route" from San Francisco to Los Angeles with two "Whirlwind-powered" bombers.

► Today, the Wright-powered Chicago and Southern New Luxury Constellation provides the latest service in luxury between Chicago and Houston ... 4 hours, 7 minutes northbound ... 4 hours, 17 minutes southbound ... also flights between St. Louis and Chicago ... and non-stop flights between St. Louis and Houston in 2 hours, 37 minutes northbound, 2 hours, 47 minutes southbound.

► On December 15th, Constellation

service by C-54 was extended into the Caribbean to Cuba, Jamaica and Venezuela. These C-54s is fully living up to its name. "More Speed—More Comfort—More Service."

► Wright Aeronautical isolates you ... Chicago and Southern Airlines' for your remarkable advancement, from early "stealing" operations to one of the great airlines of the United States. From our long association with you, we know your many outstanding contributions to air progress.

THE POWER BEHIND
MAYNARD'S "POWER"

► From this progressive airline have come such important advances as ...

geometric ignition harness, quick-change flight panel, automatic ventilation system, centralized radio control, off temperature regulator mounting, Van-in-of complete engine controls, close spacing, self-aligning and wing light for day-night. Boeing World War II, the Army Air Force got vital assistance from the C-54 "twin ship for bombers."

► Wright engines have powered Chicago and Southern Airlines' entire transport career. And Wright Aeronautical is now developing through research and engineering more and better power to help C-54 and other leading airlines of the world to achieve even higher levels of performance.

WRIGHT

Aeronautical Corporation, Wood-Ridge, N. J.
A DIVISION OF CURTISS-WRIGHT CORPORATION

WHO'S WHERE

In the Front Office

Charles L. Hardy has been named president of Joseph T. Rossini & Son, Inc., steel construction organization. Hardy replaces Edward D. Gault, who has become chairman of the executive committee. Thomas E. Howard was elected vice president. Both Hardy and Howard were appointed directors and members of the executive committee. Hardy came to Rossini in 1937, Howard joined the firm in 1937.

Wesley E. Mohr has been named assistant to United Air Lines executive vice president. He was formerly UAL's flight instructor manager.

Changes

Earl Barnes has been appointed director of operations at Air Transport Arm's operations and engineering department. John D. Shaw has been named manager of the Los Angeles area for Alcoa's aluminum division. General Motors, announcing Alfred C. Berger, who has been an assistant vice president of Alcoa and now work on special assignment.

Rear Adm. John M. Hooten, USN, has been ordered to report, as Commander, Pacific division of Military Air Transport Service. Hooten was in command of a Pacific Fleet carrier division. Now vice commander of MATS in Rear Adm. Hugh H. Goddard.

Rever Corp. changes, Donald H. McDonald has been promoted to director of research and development. Percy C. Reddy has been named sales manager, and John J. McDuff has been made manufacturing manager. Joseph R. O'Connor, formerly assistant to the sales manager of Curtis Propeller division, has been appointed purchasing agent of Pacific Corp. N. J. has been ordered to report.

Paul Jan has resigned as assistant general director of American Airlines after four years with AA, and AA. W. E. Douglas has been appointed assistant director. T. W. Wright, former president of Wright Motors, has been named superintendent (assistant to the director) of public relations.

Honors and Elections

Richard E. Bailey, manager of the civilian division, marketing department, Standard Oil of California, has been elected chairman of the American Petroleum Committee for 1951. His successor John F. Baugh of Gulf Oil. Donald H. Young of Ford Oil was elected vice chairman of the committee, succeeding Melvin DeCasper of Standard Oil of Kentucky.

Richard W. Ramsey, Clinton S. Merwin public relations director, has been named 1951's chief outstanding young man by the Editorial Association of Commerce. James S. Lutz has been elected a director of United Aircraft; Export Corp. He has been with Pratt & Whitney Aircraft and the export division for 24 years and a vice president of the latter since 1947.

INDUSTRY OBSERVER

► Postage stamps say Air Materiel Command budgetary, Wright Patterson AFB, has given Glenn E. Martin Co. a letter of intent ordering production of the 500mm Mistral guided missile. Mistral, an Air Force project, originally the MX-771, is now TSM-1. Project was combined with Navy's Regulus. Final production system will be the SSN weighing approximately 12,000 lb. Mistral will be in service early in 1952.

► Interesting tidbit of negotiations presently under way between Republic Aviation and General Motors Corp. as licensing agreements for F4U manufacture in the probability that GM will be licensing British Avrovels Holdings. T-28B. Current Suppliers in the fighter instead of GM's own Allison jet engines which now power other model F4Us.

► McDonnell Aircraft's Little Henry single jet bomber was demonstrated recently to military officials and pilot trainers at USAF's jetless school, Crowsville AFB, Tex. Copter was piloted about a Fairchild C-52 and flown to the base for the demonstration. Army and Air Force personnel were shown Little Henry's capabilities in hovering, slow forward, outward and backward flight, takeoffs, climb, turn, and zero-thrust power-off glides and emergency landings.

► Allison J-31 and J-37 turboprops have built up a flight acceptance total of more than 480,000 hrs in USAF and Navy planes, a recent revelation shows. No other jet engine manufacturer in the world has achieved this week flight operational time, the GME division reports.

► De Havilland of Canada is delivering its first Beeper to New Zealand shortly after the first of the year. It consists of a Beeper which flies from that country. The versatile 400 hp. Canadian plane will be equipped with a fuselage for aerial defense and bombing, to Royal Air Force. End of New Zealand. It will be delivered at a starting cost equivalent to approximately \$25,000.

► Aircraft, Ltd., reported to have its new production Avrovels prototype transport plane, soon about Jan. 1, following repairs after a recent landing which broke both engine mountings, engine both engine to be dropped from the loading (Avrovels Week Dec. 27). A center-mounted wheel on a leading load 1.5 ft in front of the center load, mounted on the main landing gear, is being tested. Part of the reason for the engine mounts resulting in the failure. Repair included bolting up the engine structure to prevent movement of such an accident.

► Further indication of the importance of the Boeing B-47 Stratojet bomber in the total USAF program is seen in the news that Link Aircraft Inc. has received a \$2-million USAF contract to produce seven with outboard and action simulators that of the B-47. First of the trainers is to be completed by 1951, and the initial order may be followed by call for additional trainers. The Link plant in Hawthorne, N. Y., now employs about 300, compared with a World War II peak of 1700.

► Boeing Wichita continues to step up employment for B-47 production with a current total of 15,000, it is reported to be increased to 18,000 within 6-8 months. Experience indicates that the heavier materials and more complicated machining required for the jet bomber are not as readily adaptable to production by women workers as were the B-29 bombers built for World War II at Wichita.

► An expansion program to double the size of the Avrovels' outboard plant at Vandalia, near Dayton, will cost an estimated \$10 million. Besides adding tremendously controlled procedures and developing new mechanical processes, the Avrovels' plant, the Avrovels' plant of General Motors, also makes new turboprop engine controls, turboprop engine parts, and actuators for landing gear, flaps and other aircraft systems.

Washington Roundup

Emergency Program: When?

The new war "emergency" build-up of military might is still rolling forward only on paper. But Washington estimates that orders won't be placed until spring at the earliest to get it going full swing in laboratories and factories, in construction of installations.

The President's 1952 fiscal year budget which will go to Congress in mid-July will have a "war time emergency" for the Department of Defense—a "special" program at what it will spend over the coming year. The reason the Joint Chiefs of Staff haven't issued a "war emergency" program on which to base their estimates. They are waiting for the potential plague of retro-scientific weapons. Navy's estimates are outstripping Air Force estimates, and vice versa, and Army estimates are outstripping both.

The Defense Department doesn't expect to have a program in study enough shape "much before spring" to request a third supplemental appropriation for the 1951 fiscal year and a 1952 fiscal year appropriation to implement it. Budget and congressional chances will take at least several weeks. Then a program can get underway—a program substantially similar since last Nov. 24 when outcries of Korean equipped Chinese Communist in Korea joined the U.S. into facing up to the prospect of a major power war.

Meanwhile, the services are on the more modest build-up program drawn before Korea reverses. Second supplemental appropriation, approved last week, ample meets it.

'Partial' Mobilization Support

Gen. George Marshall wants to study public opinion before a congressional committee of Defense Department's plan for "partial" mobilization. The purpose would be to gain congressional clearance for a bigger build-up, mobilize the country for a long term buildup of heavy military spending and the lower standard of living that goes with it. "Partial" mobilization will put the Armed Services by 1951 at approximately 1,000,000 the strength needed to meet our needs. A bigger build-up, Marshall feels, might lead to a big increase in defense if war doesn't come.

New Key Figures

• **Key Joseph O'Mahoney**, slated to take over the chairmanship of the Senate Appropriations Subcommittee on the Armed Services, will urge the military to move faster and perhaps further. He disputes at the discretion of the military to "putting going." Expenditures indicate that new defenses and personnel strength increases, but O'Mahoney points out USAF spent less than \$1 billion and Navy less than \$150 million over the last six months. He feels that the military is sitting on riches too low in its "partial" mobilization program, but is withholding final judgment on this. Since his record and opinion, O'Mahoney brought the 70-70 USAF program when the administration wanted it trimmed down to 45.

• **William H. Foran**, new boss of National Production Authority, is the first person to head a new agency now under consideration to take over public utility as well. The contemplated agency would be patterned after

World War II's WPB. It would come under Office of Defense Mobilization, headed by Charles E. Wilson. Its job: schedule military procurement, expedite it, grant priorities.

• **Rear Adm. Thomas S. Canine** will take over as chief of Navy Bureau of Aeronautics when Rear Adm. A. M. Froese leaves for sea duty about March. Canine, commander of the recent Yorktown in Pacific campaign during the War, is now Chief of Staff to the Commander-in-Chief of the Atlantic Fleet.

How Much Airpower?

Although USAF now talks of a 300-group USAF, the fact is that at the present lagging rate of planning progress, it is on the side of optimism to hope for any more than 541-group USAF in being by the end of 1953, the "target" date set by the Joint Chiefs of Staff for readiness for a least war. The 300-group program was determined before the declaration of a war emergency.

Build-up in naval airpower between now and then will be "modest." Only a few carrier air groups, the backbone of naval power, will be added to the 13 now programmed. Naval air units aren't pushing for big more.

New Weapons

USAF and BuAer research and development programs, encompassing as projects that can be put in operation as far as 1952, are giving top priority to guided missiles, radar, jet engines and photo reconnaissance equipment. The \$555 million USAF and the \$130 million BuAer already have for 1951 fiscal year will probably be doubled in the third supplemental. Here's the outlook for new weapons:

• **Short-range guided missiles** will be in large-scale military use within two years. A USAF surface-to-surface missile is further advanced, will probably be used by the other services. It can also be used for ground target and air-to-ground firing to the air-to-air field. Navy missile launchers will probably be powered by USAF.

• **Medium-range USAF** has completed development work on one. It may be ready by the end of 1952.

• **5000-mile missile** USAF did last year as a sample of this range, but estimates development in five to ten years off—less optimistic than predictions of a few years back.

• **Long-range missile** USAF has a 90,000 ft. altitude cruise missile interceptor fighter in air defense. It will be used for "point-to-point" strikes. But can't hit the "off hit" "area" defense.

• **New strategic bomber**: USAF plans to have a successor to the B-36 ready for operational use in three years by the end of 1955. HFE is being the B-52 or the B-57, both not in the shortest run.

• **No more training planes**: USAF and Navy have agreed that training in strategic air is adequate for pilot training for the next year at least. They won't be purchasing any new ones right away.

• **Cargo plane for MATS** which could be used in an aerial medical mission to expand itself, has been moved out of USAF's research and development program.

• **Medium troop transport**: Development of a new type is being pushed by USAF.

• **Helicopters**: Navy, going all out in recruitment of these machines, plans to transport them by placing a few on all ships in a zone.

AVIATION WEEK

VOL. 54, No. 2

JANUARY 8, 1951

The Airframe Industry Produced ---

	Total	Military	Civil
1946	26,374,400	22,374,400	37,322,000
1947	29,235,400	25,400,000	17,322,000
1948	35,232,400	25,400,000	18,322,000
1949	36,500,000	28,000,000	6,700,000
1950 (estimated)	42,000,000	27,000,000	1,900,000

(Airframe industry)

With Employment of ---

	Total (airframe, engine, propeller)	Airframe	Engine	Propeller
1946	165,412	343,258	30,383	N.A.
1947	188,282	341,181	35,031	N.A.
1948	215,848	346,657	36,877	2,464
1949	218,900	343,000	41,000	8,000
1950 (estimated)	235,000	373,000	42,000	11,000

(Average for year)

For Sales of ---

	Sales	Net Profit (after contingencies)
1946	132,496,000	\$ 1,000,000
1947	140,214,000	\$ 2,200,000
1948	1,102,700,000	\$ 16,000,000
1949	1,370,000,000	\$ 226,000
1950 (estimated)	2,000,000,000	N.A.

(All companies)

£—Loss F—Profit N.A.—Not Available

Production Step-Up Faces Rocky Road

Industry doubts it can expand five-fold in one year; triple increase is more likely.

By Alexander McIsaac

Aircraft manufacturers and their firms now getting into the field, are starting the New Year with increasing apprehension of the probably long stretch to be taken as the road back toward the production levels of World War II.

Actually, even if the first full production expansion target, slated for by First Deputy Premier, is achieved, the 1951 attainment will fall below the peak output and action years of 1942, 1943, 1944 and 1945.

In addition, aircraft production faces a new military world production figure and up.

• **1946** (Aircraft Industries Association): 37.

• **1947** (Aircraft Industries Association): 37.

• **1948** (Aircraft Industries Association): 37.

• **1949** (Aircraft Industries Association): 37.

• **1950** (Aircraft Industries Association): 37.

• **Optimistic Goal**—Five million aircraft industry analysts expect the Tenth Deputy of aircraft production to be achieved in a year. A triple expansion is expected to be clear to reality.

• **Second Deputy**—The Tenth Deputy of aircraft industry analysts expect the Tenth Deputy of aircraft production to be achieved in a year. A triple expansion is expected to be clear to reality.

• **Attainment of the President's goal** will require expediting of placing of production contracts, provision of aircraft materials and required production tooling, and the increasing of skilled labor with all of these measures being carried out far more effectively than the Commission and industry were able to do during World War II.

The high production strategic is based on World War II experience, when the expansion program enabled industry to triple output each year, and the peak was reached in early 1944.

Availability of plants and equipment and workers left from World War II

peak operations are advantages offset by complications of producing the 1950 year, namely: It takes approximately four times as many men (over 100,000) to build a combat airplane as it did a production one of the same type two years ago.

There are again critical materials problems, design materials stockpiling, and upon the shortage of skilled manpower is a severely limiting factor.

• **Civil Production**—A far cry from production in 1951, the defense budget on aircraft: National Production Authority provided the necessary priorities to permit continued maintenance this year.

An aircraft lines and manufacturing have made a strong case for continued production of transport planes of which some 500 are now on order, including Air Force and Navy orders for 90. Assuming that priorities are made available, deliveries of two and four-engine aircraft in 1951 will probably exceed 1948, as Air Force estimates, can provide in only 75 in 1951.

• **Supplies of manufacturing of pro-**

Obligational Authority for Aircraft Procurement

	Fiscal 1970	Fiscal 1969	Fiscal 1968	Fiscal 1967	Fiscal 1966	Fiscal 1965
Air Force	\$603.1	\$1201.3	\$790.8			
Navy	2160.9	570.6	738.7	\$7586.9	\$17,816.4	\$873.8
Air Force	32.5	N.A.	N.A.	2688.7	1748.1	1423.6
MDAP	1148.5	N.A.	N.A.			
	13,137.7	1700.7	1713.6	10,445.6	21,629.5	4207.4

1000,000 (estimated)

* Not applicable

† Includes supplemental 1949 appropriations

‡ Includes funds not shown

§ Language used to describe MDAP procurement not compatible with that used to describe Air Force, Navy and Army procurement—e.g., procurement of aircraft and related items

sonal planes by several million during the national emergency is expected to curtail the small civilian plane fleet output in 1971 and below the 1950 level of approximately 3400 planes.

The AIA statisticians estimated that military plane production in 1949 reached approximately 3000, on the basis of 37 million lb. of airplane production authorized for the year. The night fighter was projected from actual data for the first 10 months of 1950. Over 100 civilian and military light fighters were turned out in 1940, with a substantial increase expected in 1951, so the base of orders for more than 500 biplane fighters in the three military services (Army, Navy, and Air Force).

► **Reconstruction—**Transportation is expected to reach 100,000 by mid-1950 in the plants of basic aircraft companies and parts and components suppliers. This compares with a figure of 250,000 as of June 1939. In the event of full-scale mobilization, the job itself would go much faster.

Increased labor costs are an industry worry. As of Sept. 1948, average hourly earnings for aircraft and parts workers stood at \$7.55 as compared with a 1944 average of \$1.57. Since the September average was made, plane and parts makers and additional overtime payments have been given to new workers by a number of aircraft firms.

In the aircraft industry, as in the fall of 1970, workers were averaging 49 hr of work week, while aircraft engine workers were averaging nearly 45 hrs per week. A return to the 40-hr work week, used in the aircraft industry in 1944-1945, would require a decision by Armed Services to use better methods for avoiding under Federal Wage and Hour and Walsh-Healey Laws.

Generally speaking, according to the AIA, most of the aircraft industry already has more than a 40-hr work week. Part of Whitman and Hamilton Steel and Division of United Aircraft Corp.

are operating on that basis, as are Lockheed, Republic and Grumman. Portions of Douglas and North American personnel are on the same overtime schedule.

► **Contract Commitments—**Speed with which the military services make contract commitments for air power build-up depends on the importance of factor in the timing schedules for 1971.

With power lost week by Congress of a second supplemental defense appropriations for fiscal year 1951, approximately \$1.2 billion was committed for aircraft procurement for the year. This included \$1.1 billion for aircraft and supplies committed under the Mutual Defense Assistance Program for Britain and also approximately \$1.1 billion for USAF and Navy planes.

No matter how quickly these funds are committed, it will be probably six months to a year before effects of new orders show up in increased aircraft production. So urgency in placing the orders will also be an important role in getting the increased production done.

► **Sales Volume—**Total sales volume of 15 large airplane, engine and aerospace companies for 1950 is estimated at approximately \$5 billion as compared to \$1.5 billion reported by the same companies for fiscal 1949. It is anticipated that all the major aircraft manufacturers will meet a profit for 1950, the first time that all have been "out of the red" together since the end of World War II.

Airplane net profit before depreciation and extensive extra profits has been estimated to be considerably higher for 1949 than for 1946. The earlier year was cited as a year of low earnings for aircraft companies and a need of recovery from losses incurred in the two preceding years. Because of the concentration of manufacturing and the aircraft industry's results are made by AIA as to profits after depreciation and taxes.

Air Appropriations Rise \$5 Billion

A second supplemental bill for Air Force and \$5.14 billion for Navy and Air Force aircraft procurement is expected to be passed by Congress for the fiscal year 1951 for \$11.9 billion for USAF and \$5.4 billion for Navy.

The new money is at the second of three supplemental appropriations by Congress last week. But with a "week" from the administration, the services already have been obligating these funds for the past two weeks. A third approval would bring procurement at the Pentagon will make still another increase in the 1951 fiscal budgets of USAF and Navy.

The second supplemental also carries \$5 billion for National Advisory Committee for Aeronautics to finance a step-up of military research and development programs. The measure carries \$1.5 billion for USAF and \$5.7 billion for Navy research and development.

This brings the total for the 1951 fiscal year to \$15.5 billion for USAF and \$13.0 billion for Navy. NACA will see \$1.5 billion for research facilities at the Ames Laboratory and \$1.2 billion for 600 new employees, including 150 new engineers.

► **Remarking the Base—**The main objective of annual supplemental bills is to broaden the industrial base for maximum production. \$106 million of the USAF funds and \$62 million of the Navy funds are earmarked for tooling up or converting plant capacity.

The measure also involves USAF aircraft procurement \$2.1 billion. This brings the total USAF appropriation for fiscal year 1951 to \$6.4 billion. There are no funds for Navy aircraft procurement. Budgetary research funds appropriated \$2.2 billion.

Compared inside procurement, \$107 million of the 1951 money is for USAF and \$12 million for Navy. This leaves the total allocations for 1951 fiscal year to \$149 million for USAF and \$23 million for Navy.

Industrial mobilization, \$65 million of the 1951 money is for USAF and \$17 million for Navy. This brings the total allocations for this year to \$19 million for USAF and \$29 million for Navy.



First U.S. Turboprop Transport Flies

Initial flight begins extensive test program by Convair and Allison, with hopes high for military orders.

By Thomas M. Self

San Diego—The Convair Turboprop made its first flight here amid the greatest enthusiasm yet granted for a turboprop aircraft. One Convair official told Aviation Week that it improved turboprop planes are not only the step before jets, but will now show that in the commercial transport field. Part of Convair's enthusiasm stems from successful flight tests with its XP7V-1 during last January. Company officials spoke of a "manned version" of two-engine planes designed for medium distances. "Also, Convair people are happy about the early adaptability of the Model 240 Convair-Learner to turboprop power."

As yet the company has no orders for military or commercial conversion, but officials think the military will have some T-33 trainers converted to turboprop. At least, they say, the Air Force is "very interested" in Turboprop, and the T-33 is a natural for turboprop conversion.

Meanwhile, Allison and Convair will carry out extensive flight tests with the Turboprop, and Allison has started design studies for incorporating advanced T-33 engines in its Model 340A Convair-Learner now going into production.

► **First Flight—**First flight of the Turboprop lasted 15 minutes, about twice as long as the first flight of the turboprop Douglas A1D Skyhawk. The aircraft, however, built by Convair for the Allison Division of General Motors Corp. was not a turboprop in fact. But pilot R. C. Loomis brought it down for a preliminary landing at the Naval Air Station at Miramar, 15 miles south of San Diego, where vibration appeared in the left propeller.

The vibration check gave rise of the

aircraft's electronic power-plant installation. Loomis, who is also manager of engineering flight at Convair, and the plane could easily have continued, since it is equipped with alternate control systems. And Convair's turboprop XP7V flying boat has flown smoothly with propeller vibration. Vibration was the result of a slight tilt of balance because of the heavy instrumentation on the left propeller.

The Turboprop's first flight was scheduled for 1 PM, and the step was in the air with two minutes to spare. The turboprop landed for its first test on the Langford Field flight line and took off after a short run up, without incident, a preliminary hour run. (Two tests had been run in the morning and the previous afternoon.)

The Convair Allison was climbed smoothly after coming 3000 ft of altitude. "Turboprop was quiet, almost silent in comparison to the piston-engine Convair-Learner which took off its minutes earlier to observe. The Turboprop was nothing when it was because of the change in pitch."

Test crew reported the flight didn't quit and free of vibration during the flight.

For starting the engines for first flight, the Allison's automatic system was carried in a truck alongside the plane. The succeeding flight, the portable system will be installed in the plane and the engine started by a push-button on the instrument panel.

► **Research Program—**Dr. B. W. Neff, vice president of CMG and general manager of the Allison Division and Allison plant in San Diego, said the Turboprop is an extended flight test project program. This system test will pitch and solve the mechanical operating conditions relating to a turboprop engine. Results and data will be made available to the

military services, aircraft manufacturers and commercial airlines.

Following successful completion of these tests, Allison may turn the Turboprop over to MATS and Allison for cargo service under actual transport operating conditions.

Even before they leave any flight test to evaluate Convair and Allison officials are shopping it up for the turboprop transport. One Convair official explained that the turboprop engine can incorporate every improvement in jet engines, and take the full advantage of economy. He believes constantly improving turboprop engines will be the answer in the commercial transport field and atomic power comes along.

In a more modest vein, LeMotte T. Colton, president and general manager of Convair, said in the short and medium range the turboprop transport definitely promises to be more efficient than pure jet transports, and responsible in speed. He said that the facts of Convair's use in the military is a new reason to use turboprop engines. He added that the company's new model Convair-Learner 240A, now going into production, can be even more readily converted.

William C. Keller, Convair project engineer on the Turboprop test, says: "Where 'The winner just isn't' after that in use turboprop." Keller adds the turboprop very clearly will be able to compete with piston engines in all ranges. On the economic side he points out that fuel costs are 10 percent of the operating cost of a commercial transport. Fuel costs 15 percent of a piston, but a turbine engine would be an 18-percent-piston engine.

There's a difference in specific fuel consumption now that from piston engines. Keller adds, but he says it is not enough to fill the gap in fuel price. And it won't be long, he says, before

A new expenditure can compute its own profit credit by using its industry average rate of return in the base period.

- Special Exemptions—Some important special provisions in the bill are:
 - **Worst year** in the base period can be eliminated in figuring the base period average rate.
 - **Deficit** in any remaining base period year, can be treated as zero income.
 - **Fyres**—any downward and any year

carry back for net operating losses may be substituted for the two-year carry-forward and two-year carry-back permitted in World War II.

- **Overseas**—losses incurred in the base period can be carried over to 1970 and 1981 if it has not been used to adjust income of other years.
- **Business** the average base period net income for capital additions during the latter part of the base period.

USAF Calls in More Auto Firms

And aircraft manufacturers grumble over sidetracking of plants which would have expanded their output first.

By Dick S. Lee

An Evans program of expanding reserve plants and calling in segments of the automotive industry to augment postponed aircraft expansion continued last week.

The aircraft manufacturers who had suffered in immediate orders because of the introduction of new contract—auto manufacturers were being their assets and were not overly happy about the war the program was turned out. But the more automobiles of them had already heard about their expansion was, from the Defense Department. And nobody was saving much for publication.

- **Studebaker Corp.** confirmed Evans' move. **Wired Dec. 25** that associations were under new letters that corporations and General Motors for the manufacture of the GP 145. That engine is used in preprototype for the Boeing B-47, North American F-86 and various pods of the Corsair F-96.
- **Rockwell** according to Air National Command, has been asked to receive a small section of the Bell Mi-4000. Company for modification of Boeing B-29 bombers now being withdrawn from storage. The Bell Mi-4000 will receive mainly a machine tool storage facility for the time being, Air Force officials declared. USAF officials previously declared the facility was being held the major production of a new bomber (Aviation Week Dec. 25).
- **General Motors Corp.** confirmed as earlier. **Aviation Week** says that it would build a new factory. That is the Rockwell F-400 Thunderbolt which is slated in USAF's major contribution to nations allied under the North Atlantic Treaty's Mutual Defense Assistance Program.

- **General Electric** has announced that it is expanding its own oil engine facilities overseas at its Lockland, Ohio facility. GE officials state that it is close to doing so since they "purchase large and new construction."
- **Boeing Facilities**—Probably the most capital cost for broad facilities among

aircraft manufacturers was President Truman's Dec. 18 declaration of a state of National Emergency. Licensure expansion of the nation's Armed Forces "according to plan" was looked upon.

Overall expansion plans proved to be more limited in World War II provided two phases of mobilization. In defense mobilization planning of the Air Force had been built around the new formula "Standard study."

The study outlined a program of planned expansion which would be:

- **An initial state of expansion** in which aircraft companies would be ordered to accept orders built during the War and held by the Air Force in reserve status.
- **Secondly**, mobilization of the automotive industry and conversion to aircraft manufacturers.

But President Truman's declaration ordered a cutoff in normal commercial manufacture of automobiles, refrigerators, radios and radio sets, almost only on various needs and restricted manufacture of virtually all items for civilian consumption. As a result, the Department of Defense ordered defense contractors spread out to take on the slack in industries facing cutbacks because of military shortages.

Meanwhile, the aircraft manufacturer are already producing in defense production are left to it and will gain the next round of business in awarded. And the original industrial mobilization plan is still as good as new, still waiting to be used.

Boeing, P&W Test DOs

National Production Authority is not ready to admit that its DO priority system is not close to the way it should. But just the same, last week it gave Boeing Aircraft and Pratt & Whitney the first crack in testing the extension of DO priorities to some specific maintenance repair and spurring supply (NRO special). To assist another

reason one of the worst bottlenecks in the defense production picture has been the fact that no priorities have been allowed on these supplies heretofore by NPA.

The NPA authorities on Boeing and Pratt & Whitney cables them to claim priority on certain drill bits and other minor items, if they make not voluminous reports on how they use the DOs. But the test agencies did nothing for them about needed new machine tools, or about the 25 percent limitation on Defense Order numbers, or about shortages of laboratory and test materials.

And the DO test operation for the two companies on NRO supplies is far from an automatic straighten to get supplies that they need.

Meanwhile, NPA is considering requests of the Materials Board and the Aviation Industry for extendable DOs by saying that NPA does not want to "dilute" the present issuing procedure.

Along with the MRO test, the NPA, and some other government agencies took several other actions to tighten up civilian use of various materials in relatively short supply, and thereby to make these more available for military defense production.

IAS to Hear State Department Official

Nineteenth annual meeting of the Institute of the Aeronautical Sciences is to be held Jan. 29-Feb. 1 at the Hotel Waldorf, New York City.

Rounder coverage of the aerospace field is evident in the program of scheduled papers.

Delegates participating in the annual meeting include, in addition to the IAS, the American Helicopter Society, American Mechanical Society, the Diesel and Florence Gas Association, the Society of Automotive Engineers, the Society of Radio Engineers and the Institute of Navigation.

Conferences at State House F. Webb will be the guest of honor and principal speaker at the Honors Night dinner Jan. 29.

Adams Named to State Dept. Post

Civil Aeronautics Board member Russell B. Adams, whose term as such has expired Dec. 31, has been named by President Truman to the post of special assistant to the Secretary of State.

Adams expects to take up his new State Department job about mid-February. He will be associated with the Federal Aviation Administration at Langley Field, Va., investigating "safety" international agreements on various subjects, including aviation.

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AERONAUTICAL ENGINEERING



Heron Suggested as Best Shorthaul Bet

Four-engine feeder-liner seats 14-17, is Dove development.

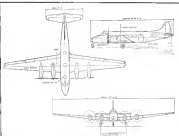
While U. S. feederline operators only recently have begun to draw up specifications for the shorthaul plane they would like to have by 1955 (Aerobus Week Nov. 20), the British have already come up with an aircraft which, they feel, fits the bill right now.

It is the de Havilland Heron—first flown at Hatfield, England, on May 10. The new Comstock-11 four-engine 24-passenger design, Model 498, closely approaches the projected feederline requirements (14-17 passengers), but getting this plane off the drawing board and into production might cost \$10 million in the face of a slow market. Also, it would have turboprops, whereas the feeder operators initially want piston power.

In coming about for a logical, low-maintenance replacement for the obsolete DC-3, finding in the U. S. is that there isn't much in the job. The 31-passenger Douglas Super DC-3 and the 14-passenger de Havilland Dove and Pucallt Prince, both 11-passenger planes. But the Super DC-3 may be too big, the Dove and the Prince too small.

But America's best bet for meeting feederline operators' present and immediate future requirements, according to thinking in de Havilland circles, has been overlooked—the Heron.

It was built, de Havilland technicians say, as the solution to the operator's problem with the overcrowded Rapide and the half-empty DC-3. And it is intended for a market which needs a feederplane to operate from small fields which lack a minimum of maintenance facilities.



While the Heron falls short of the 24 passenger, 1150 lb. cargo conception which U. S. feederline operators are now contemplating, proponents of the English craft feel that with present passenger preferences—air even with the optimum type of volume increase in the immediate future—the prospects will not be very bright for proving the government's speed money on the type of prototype desired or to consider the existing subsidies required to operate it should it ever be built.

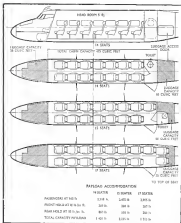
They feel that the Heron's 14-to 17 passenger capacity should be ample to handle even peak load requirements on American feederlines for a good season just to come.

They bolster their contention with

- Four-engine reliability.
- Takeoff from a grassy runway in 2000 ft. to clear a 50-ft. obstacle at half-gust load, zero wind.
- Gas-engine-inlet intake to clear a 50-ft. obstacle in 300 ft.
- Maintenance simplicity afforded by improved, non-rotating propellers, and fixed landing gear (detachable gear wheel).
- Dove Components Used—Another important feature of the Heron is its built-in economy. In the 570,000 price (\$6500 more with power windows) many manufacturers found in the de Havilland Dove, 30% of which have been built.



DUKW V2 HAVFIELD arrives at port island engine on de Havilland's ship.



This adoption of Dove parts saves the cost of considerable new tooling, speeds the production schedule, expedites on acceptance from four months to three months, and gives the manufacturer the ability to reduce spare parts holding for operations.

The entire Dove wing has been incorporated, with the root extended to carry the increased engine. Substructure and its adaptation to a similar extension. Control surfaces are essentially Dove parts and the aileron is identical. Landing gear is the Dove cockpit (with

rudder attachment) and tail stub, but the extended main body has longer side panels and feet, higher and longer strut structure. Numerous fittings on the two craft also are the same.

And known laterally with the Dove substructure was basic influenced design.

► Fuselage Accommodation—Fuselage has an oval cross-section affording 7 ft. 6 in. in headroom and 6-ft. width throughout the length of the cabin.

For the 14-passenger arrangement, there is a window for each seat. By arrangement of the toilet facilities, 15 seats can be accommodated. Elimination of the toilet compartment and enlarging the size of the rear luggage room will give a 17-passenger version of the Havfield.

Chairs (also Dove-type) are fitted at 12-in. pitch, have no rear legs, so giving unobstructed leg room. Adequate space between seat arms is 6 in.

Cabin entrance door is at the wing on port side. In the roof are three emergency exits.

► Body Construction—Fuselage's monocoque structure has also influenced by shape and structure of V-1000 aircraft. Cabin portion has two main longitudinal ribs above the window line, one main longitudinal rib below.

Wing section incorporating the bulkhead and forward luggage compartment (under cockpit floor) is separated from the cabin by a bulkhead forming part of the main fuselage structure. Another structural bulkhead partitions the aft end of luggage space, with a removable side panel for access to the tailcone. Two other bulkheads in the rear of the fuselage carry the tail attachment fitings.

The wing center section spar, a built-up box structure, carries the bottom of the fuselage and is integral with it.

Cabin floor has stepped construction, extends from either side of the center section spar and is supported by light alloy transverse members.

► Landing Gear—This is of the tricycle, fixed type. Main units are interchangeable rubber sprung and are removable by lowering a single set on top of the wing.

Nose wheel has an oleo shock absorber and is fully steering.

Passenger wheel hub is operated by a hand lever on the control column in manual landing position.

► Wing—Aileron incorporates a main flexion spar, a built-up light alloy tube used to carry flap and aileron, and a forward flexion spar (extending from the root to the far side of the outboard aileron) to carry the engine mounts.

Flap and aileron (also elevator and rudder) are fabric covered. A portion of the wing leading edge is hinged upward for access to fuel,

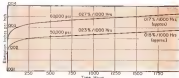
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How to cut costs when drafting revisions are necessary



* A case history based on the experience of the Virginia Department of Highways



1 Long-lasting intermediates are assured. In a "fast-response test" made by the Virginia Dept. of Highways, an Autographic print was left on a roof top for 30 days. During that time this photographic intermediate was exposed to 300 hours of sunlight... 6.58 inches of rain. Despite all of this abuse it was declared "good as new."

First, indeed, that "Autographic" will stand up under less flying, normal conditions... will maintain color in the year after you... ready to produce sharp, clean blueprints whenever needed.



2 Photographic intermediates are produced at a new low cost. When "Autographic" is used, positive photographic intermediates are produced directly without a negative step, with no excessive handling. Maximum efficiency is realized by the Virginia Dept. of Highways because its "Autographic" are treated automatically... in a continuous blueprint machine, which can be converted readily for Autographic production.

3 Drafting revisions are easily made. Unwanted details—such as existing style of ways—are removed quickly from "Autographic" with concise fluid. Then the proposed kind of ways are drawn in with pencil or ink. Thus, new centers—prepared without costly redrawing—are ready to turn out the blueprints needed by county supervisors and resident engineers.

FOODAY the State of Virginia is engaged in a long range Highway Zoning Program in which necessitates changing thousands of drawings to include proposed right of ways.

How to do the job most economically was an important question. Redrawing was ruled out—too slow, too expensive. The use of intermediate prints was considered next. They had to be long-lasting... easy to make... easy to revise.

Here's why Kodagraph Autopositive Paper was chosen for the job:



Photographic intermediates are produced at a new low cost. When "Autographic" is used, positive photographic intermediates are produced directly without a negative step, with no excessive handling. Maximum efficiency is realized by the Virginia Dept. of Highways because its "Autographic" are treated automatically... in a continuous blueprint machine, which can be converted readily for Autographic production.

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DH Heron

Performance Data

(At 12,100 ft. gross, standard at maximum endurance)

Recommended cruising speed (at 8000 ft., 60 percent stall speed) 160 mph

Corresponding fuel economy 40.5 gal./hr.

Corresponding altitude per gal. 5.46

Rate of climb, sea level 1180 fpm

Rate of climb with one engine out, remaining engine at maximum power, maximum prop in high pitch 840 fpm

Service ceiling 18,100 ft.

Altitude ceiling to clear 10 ft., sea level from dry grass air field 1190 ft.

Altitude ceiling to clear 50 ft., sea engine out at 1000 speed in still air, from dry grass air field 1190 ft.

Altitude ceiling to clear 100 ft., sea engine out at 1000 speed in still air, from dry grass air field 1190 ft.

Altitude ceiling to clear 150 ft., sea engine out at 1000 speed in still air, from dry grass air field 1190 ft.

Altitude ceiling to clear 200 ft., sea engine out at 1000 speed in still air, from dry grass air field 1190 ft.

Altitude ceiling to clear 250 ft., sea engine out at 1000 speed in still air, from dry grass air field 1190 ft.

Altitude ceiling to clear 300 ft., sea engine out at 1000 speed in still air, from dry grass air field 1190 ft.

Altitude ceiling to clear 350 ft., sea engine out at 1000 speed in still air, from dry grass air field 1190 ft.

Altitude ceiling to clear 400 ft., sea engine out at 1000 speed in still air, from dry grass air field 1190 ft.

Altitude ceiling to clear 450 ft., sea engine out at 1000 speed in still air, from dry grass air field 1190 ft.

Altitude ceiling to clear 500 ft., sea engine out at 1000 speed in still air, from dry grass air field 1190 ft.

Altitude ceiling to clear 550 ft., sea engine out at 1000 speed in still air, from dry grass air field 1190 ft.

Altitude ceiling to clear 600 ft., sea engine out at 1000 speed in still air, from dry grass air field 1190 ft.

Altitude ceiling to clear 650 ft., sea engine out at 1000 speed in still air, from dry grass air field 1190 ft.

Altitude ceiling to clear 700 ft., sea engine out at 1000 speed in still air, from dry grass air field 1190 ft.

Altitude ceiling to clear 750 ft., sea engine out at 1000 speed in still air, from dry grass air field 1190 ft.

Altitude ceiling to clear 800 ft., sea engine out at 1000 speed in still air, from dry grass air field 1190 ft.

Altitude ceiling to clear 850 ft., sea engine out at 1000 speed in still air, from dry grass air field 1190 ft.

Altitude ceiling to clear 900 ft., sea engine out at 1000 speed in still air, from dry grass air field 1190 ft.

Altitude ceiling to clear 950 ft., sea engine out at 1000 speed in still air, from dry grass air field 1190 ft.

Altitude ceiling to clear 1000 ft., sea engine out at 1000 speed in still air, from dry grass air field 1190 ft.

Altitude ceiling to clear 1050 ft., sea engine out at 1000 speed in still air, from dry grass air field 1190 ft.

Altitude ceiling to clear 1100 ft., sea engine out at 1000 speed in still air, from dry grass air field 1190 ft.

Altitude ceiling to clear 1150 ft., sea engine out at 1000 speed in still air, from dry grass air field 1190 ft.

Altitude ceiling to clear 1200 ft., sea engine out at 1000 speed in still air, from dry grass air field 1190 ft.

and VIII radio/teletype (11000 ft. or other types of radio equipment is optional and are not included in the list figure).

• **Weights, Range—**Gross weight of the Heron is 12,100 lb. Carrying 14 passengers at 165 lb. each (2310 lb.) and baggage at 10 lb. per sq. ft. in the 111 sq. ft. of available space (1110 lb.), the capacity payload is 1420 lb.

At this figure, the stiller range is approximately 490 mi. Corresponding practical stage length is 150 mi. with SRAC allowance; which include flight in domestic (230 mi. on stage distance) and total standard base of 45 mi. After flying the 150 mi. stage with

typical payload, about 60 gal. of fuel remains.

With payload dropped to 2750 lb., still air range is about 790 mi. and practical stage is about 490 mi. with SRAC allowance.

With full baggage of 360 gal. and 1750 lb. of payload, maximum stiller range is 1210 mi. Practical stage, with SRAC allowance, at this loading is approximately 850 mi.

With third loading, you reason, no standard cruising speed is 160 mph with 10 percent of stall speed at 8000 ft.

With retrievable gear version, cruising speed is lowered to 175 mph.

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Consequently, rubber-fused dynamic stability qualities had to be determined to reduce the effect of rubber freedom on the aircraft.

This effect was considered an additional factor which might modify the basic rubber-fused characteristics of the aircraft.

Basic results of the rubber-fused flight test phase showed excellent correlation between observed results and a calculated curve based on the assumption of constant values of the stability derivatives throughout the speed range. It was therefore concluded that there were no unaccounted factors affecting oscillation characteristics with rubber fused, and that the poor damping qualities of the test airplane were probably due to the rubber being mounted close to the aircraft.

► **Rubber-Free Flights**—The second phase of flight testing—with rubber free—brought out the importance of the tab setting.

In one limited case, the cycles required to damp to half amplitude were increased by 50 percent when the tab setting was changed from +4 deg to -4 deg.

Although no quantitative data were available for the deboost tab or dehorned rubber, it is known that both these changes move the rubber into the better damping regime. Flight results were in conformity with this knowledge.

With the exception of the dehorned rubber, all of the modifications caused a deterioration of the damping of the plane with speed. Since this was found not to be a function of control-fused parameters, it was inferred that the deterioration was due to changes in rubber hinge moment persistence with Mach number. This trend has been observed in high Mach number tests of other control surfaces as well.

NACA has data that current trends in design practice make increasing wing area or poorly damped oscillations. The designer is accused by NACA of intentionally selecting a low rate of change of rubber hinge moment coefficient with rubber deflection, and a negative rate of change of rubber hinge moment coefficient with angle of incidence.

► **Permittance and Cam**—What should the designer do about it? He should design with a margin for the expected changes, with tab setting in hinge moment coefficient slope with rubber deflection. And he should select low low-speed hinge moment persistence carefully, knowing that their values will not remain constant with Mach number.

And in spite of this, if he does get a rubber design which makes the air plane unstable, he could specify a deboost tab as an expedient.



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In addition to its standard components Bendix-Pacific provides application engineering and complete system design, fabrication and test of complete systems, installation and field use and data reduction. Complete recording radio facilities can also be supplied.

Requests are invited.

Bendix-Pacific has recently developed new brief case and low price lines, the telemetering systems. The brief case lines are characterized by high vibration and shock resistance, low weight and low cost and by extremely low frequency response and can be placed into either the brief case or the low price line.

The low price line is designed to improve the quality of telemetering recordings through the selection of other accessories and by providing label, standard display of the input of the recording system.



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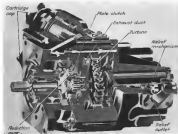
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*Based on 22 independent readership processing agencies

Source: Aviation Week Statistics



New 'Muscle' for British Jets

Rotax Ltd. cartridge starter for jets was originally developed for de H Ghost, is production accessory.

(McGraw-Hill World News)

Starter was developed by Rotax Ltd., British accessory manufacturers

Initially designed for the de Hant Ghost and fitted to an accessory for the DH Venom, Rotax Ltd. has now produced starter for jets (Aviation Week Dec 25) in a compact, 50 lb. turbo unit measuring about 22 x 12 x 8 1/2 in.

Each of the two double cartridges (one for start, the other a spare) has a 2 to 3 sec. burning time, according to ambient temperature. The aluminum alloy cartridge barrels are fire-cooled and have narrow leading edges, ensuring long contact which becomes "dry" only during the final few degrees of cap movement.

Gas from the spent cartridge is ported through four nozzles to the starter's turbine, then exhausted to atmosphere. A blowout disk is interposed to safety the unit if excessive pressure is developed, as in nozzle blockage.

Drive is through a single-stage epicyclic gear train (3:1 reduction) to a splined output shaft. Reduction gear assembly is actuated by a wedge-piston overriden clutch to absorb the shock of starting engagement. Clutch break-away setting is 150 lb-ft.

Output speed is 9000 rpm, output torque 180 lb-ft. Maximum hp at 17°C is 170.

An overtemp device is set to operate between 10,500-12,000 rpm of the output shaft.

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Fastener Problem of the Month

JANUARY, 1991



PROBLEM—Simplification of the illustrated North American Aviation wing brace joint to provide access assembly and to reduce weight.

This joint was designed to accommodate a standard fastener—bolt and external wrenching type of self-locking nut. To provide sufficient wrenching area, it was necessary to drill and back out the access hole to the point that had to be built up around access hole for proper structural strength.

The manufacturer could not redesign this joint without a change in structure. But no fastener was available that would meet these specific problems.

SOLUTION—The special "Barrel" nut ESNA Part No. S-1452 designed by North American and ESNA engineers resulted in a new wing assembly which met all original design objectives.

The barrel nut fits into a simple, drilled hole. By avoiding the need for wrenching expensive machining operations for the access hole and eliminating the elimination of wrenching area prevented clean structural design for that area being and because it becomes part of the structure, the barrel nut actually adds strength to the assembly. Complete with the famous Red Eltco Coffey which holds the nut in place, this simple barrel nut design is saving assembly time eliminating complicated design data, precluding the use of awkward safety wire, and saving weight.



If you have a problem of this type you'll find this barrel nut, Eltco Strap Nut S-1452, is available in follow: SAE hex thread sizes in mm 1/4-28 through 1-1/8-12, nylon locking inserts under extruded assemblies, all type S-1452 part design 13,500 psi min. or SAE high strength bolts.



S-1452

YOUR PROBLEM—If you have a tough fastening requirement, the solution may be found in one of the 501 Eltco Strap Nuts available in a wide range of sizes and designs. These self-locking hex nuts and other types of screw fittings are readily identified by the famous Red Eltco Coffey, the only self-locking principle which provides for (1) accurately pre-stressing bolts to ensure proper load distribution (2) maintaining constant spring loaded adjustment (3) reinforcing under vibration and shock (4) protecting internal bolt threads against corrosion (5) locking against spin (6) saving labor.

YOUR SOLUTION—Eltco Strap Nut Corporation of America will gladly go to work on your problem. Perhaps it can be solved with one of the many stress nuts in stock. Or, if it requires a completely new design idea, ESNA's fastener specialists will take on the assignment. Send your problem to ESNA, or write asking for a call from an ESNA engineer. Eltco Strap Nut Corporation of America, 2370 Vandalia Road, Union, New Jersey.



TELEMETER for high altitude bailout parachute is attached to one of system's four sensors.

Drop Data

New way to get pilot's reactions to high-altitude ejection seat bailout.

Case history of the pilot's physical responses plus drop data in ejection seat bailout from altitude is now being obtained with lightweight, maneuverable telemetering equipment for analysis by the Air Materiel Command's aeromedical laboratory.

The portable, ruggedized AN/AR-33 telemetering system, designed by Pacific Division of Bendix Aviation Corp., was used in a series of 14 jumps from altitudes as high as 42,150 ft. in tests at Holloman AFB. (Checklist says also made of a new device permit to open a parachute automatically when the chute drops to an altitude where sufficient oxygen is present.)

Registration of the Bendix TM/FM telemeter was a positive response to cope with severe conditions. For example, in the 42,150-ft. jump by AF's Capt. Vincent Mingo, he left the oxygen mask, which had the telemeter strapped to the back of it, at an altitude of 13,000 ft.

The ejection seat was manufactured to weigh less than 10 lb. To provide maximum flexibility and adaptability in the transporting unit was fabricated at three longitudinal sections of approximately equal size and weight.

Forecast wire made for strong an external power supply during ejection, checkout and calibration. A lightweight

power supply was used during the bail out and drop.

A Bendix-designed oscillator was associated with each pickup which, under applied stimulus, governed the frequency of the oscillator. Thus, each oscillator frequency was a function of the magnitude measured.

Output voltage of the six telemeter oscillators were combined and fed to the reaction modulator stage of a Bendix designed TXV-4 frequency modulated transmitter. The modulated signal from the transmitter was received, decoded and recorded by a TM/FM ground station designed for use with an AN/AR-33 telemeter.

Temperature measurements (pressure, heart rate, altitude and oxygen) had been recorded.



Concrete Throat

An inexpensive, reinforced concrete wind tunnel throat has been fabricated by students at the Northrop Aerospace Institute, Hawthorne, Calif.

Built for less than \$180, the unit was created to finish an incomplete tunnel donated by Northrop Aircraft, Inc. for use in the Institute to test models at 350-mph, speeds and for instruction purposes.

The throat is fixed on the inside with a mixture of cutting plaster and fly dust, and on the outside with plaster cement and Hydron. The mixer was found to be a good way to give a maximum non-attenuation with steel metal on wood.

Reinforcing structure consists of rings and vertical members used in place and interlocked.

Shell of the throat is 23 in. thick, opening diameter is 45 in. housing to 35 in. Weight is between 500 and 900 lb.



"Test results indicate that the operation of the S.S. White remote control flexible shaft is unaffected at temperatures ranging from -65°F to +160°F. There is virtually no measurable variation in torque required to turn the shaft, or in the torsional deflection required to rotate the actuator over the temperature range."

The reason—S.S. White flexible shafts of both power drive and remote types are subjected to exhaustive tests in S.S. White research laboratories to ensure precision performance under all prevailing flight conditions.



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THE S.S. White INDUSTRIAL DIVISION
DENTAL MFG. CO.

Dept. V, 10 East 40th St.,
NEW YORK 16, N. Y.

Pionair: BEA's New Version of the DC-3

Carrier expects to add 5 years to transport's life with new design.

London—The prototype Pionair, British European Airways' modernized version of the DC-3, has made its bow. BEA is studying the prototype before freezing the design and converting its entire Dakota fleet to the new version. **► No Dakota Needed**—Neither BEA nor Scottish Aviation Ltd., which is doing the remodeling at its Prestwick factory, will disclose the cost of the job. But it's safe to assume that it's below the \$200,000-plus cost of a Super DC-3. And best of all, from the foreign exchange view, it isn't costing a single dollar.

The modernization will not increase the aircraft's gross weight above the present 38,000-lb. maximum, and consequently no increase in power is called for. The changes are entirely within the fuselage, and are designed to give a maximum of 6400 ft. of altitude with seating accommodation for 32 passengers (in eight rows of four seats each) for the shorter hops where no galleys or overhead storage is required, or for 18 passengers when the quickly installed or removed galleys are carried.

Thus has been achieved exactly by means of two weight-saving measures: **► Radio operator's position** has been removed and the plane will serve for a two-man flight crew team.

► Heavy floor structure of the original C-47 (from which these were recovered at the end of the war) has been replaced by a lighter floor, saving 400 lb.

Removing the radio operator's seat guarantees just behind the flight deck the great space for an additional row of four seats just forward of the previous front row of the six in the existing cabin arrangements. Full-size windows have been cut in the fuselage.

BEA has 36 passenger and 8 freighter Dakotas. All 12 of these will get the two-lift treatment, according to Peter Musfield, BEA's chief executive. And BEA is shopping around for 4 more DC-3s, to give the same two-man conversion. Schedule calls for five conversions per month during this winter, so that they'll all have the "new look" by next summer.

► Five Year Man—BEA confidently expects that it will get a full five years of additional life (if built) out of the tried and dependable Douglas transport. Reason for this further modification



EARLIER LOADING is provided by drop-down steps and re-opening cargo door, and...



EASIER RIDING should result from widening seats 24 in. (by reducing aisle width)

of the Dakota is that there are a number of requests made by BEA on its internal services (within the U.K.) where the various limiting reasons neither the Vikings nor the new Ambassador or Viscounts can be operated. And on the passenger potential is such, BEA is convinced that larger seating capacity

in its planes is required.

Apart from this, however, the Dakota is still the cheapest airplane to operate in BEA's fleet. For as depreciation striving to balance its budget, this is no light matter. BEA estimates that modernization of its Dakota should save the corporation \$328,000 a year.



"FOURPOINT" patch helps air flow from the airfoil's leading edge at a BEA Viking. Two types are being tested—half-delta shape (left) and parallel edges (right).



INTERESTING air section completely blocking the turbulence in order to keep smooth during one of the test flights conducted to test the efficiency of Pionair nose

Porous Panel Anti-Icing System

British firm develops slatted bronze strips to keep fluid on leading edges; say it is effective.

Newest anti-icing article developed by the British is designed to keep air and moisture leading edges by forcing airway fluid through porous metal strips.

A 1904-ft. flight test program, begun in January of this year under the sponsorship of The British Ministry of Supply and implemented by British European Airways and TKS (Aircraft Design Ltd.), has just been successfully completed. Test aircraft was a special Short Navion.

TKS, who it has received as an equity for 250 acts at "Pionair" from the USAF.

Two and a half ft. versions of Pionair were installed in the leading edges

of right and left-hand stabilizers. The slatted half was the standard TKS double element, the other half was an entirely new Pionair panel design (see cut). Pionair, a porous metal recently developed by TKS, is a uniquely smooth, solid piece of metal formed. Actually, the metal contains millions of minute pores through which fluid-developed "Kilcoat" during fluid events. Pionair is porous both on the leading edges of wing and camber, effectively prevent the formation of ice on the recently conducted tests showed. Already forward air was also he removed under its influence in Pionair and a supply holder also attached by Kilcoat. However, the porous panel

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system serves better as an anti-ice than it does as a de-icer.

► Mostly Missing—Of 27 flights made, 14 concentrated wing conditions varying from moderate to severe. De-icing tests of the Pionair patch resulted in low consumption of Kilcoat. Instead of pumping 1 pint/lb./sq. ft. of frontal area to the wings and 2 pints/lb./sq. ft. to the tail surfaces, experiment determined that 0.66 pints/lb./sq. ft. would suffice for both wing and empennage. (In such case, the frontal area is measured at the maximum thickness outline of the airfoil.)

Savings resulting from this reduction in de-icing fluid consumption will amount to 340 lb. per plane and a reduction in operating costs of \$300 (\$37,900 per year for BEA's present fleet of 41 Vikings).

The test crew noted that Pionair reached maximum effectiveness when the surface was barely wetted. Increased fluid flow above this point gave no increase in de-icing efficiency.

Second interesting point observed was that Pionair patch was capable of preventing any ice accretion during over under certain conditions—usually when temperatures ranged from 0 to -1 deg. C. At lower temperatures, and under more icing conditions, ice tended to form in spite of a small amount would accumulate then become loosened and blow off.

► Test Flight—The test section of Pionair was full from separate tests mounted in the cabin (see cut). Laboratory calibrated pumps supplying the Kilcoat were capable of giving flow rates of from 4 pints/lb./sq. ft. to 1 pint/lb./sq. ft.

Three rotating control cylinders 4, 1, and 1 in. in diameter were projected into the streamlines to measure fluid water content and drop size. After a two-min. exposure to the streamlines, each individual cylinder was removed and placed in a separate airtight container. Difference in weight of containers and cylinders before and after exposure gave a reasonably accurate evaluation of water content and drop size.

Design of the instrument and methods of measurement were based on mathematical investigation of water droplet trajectories conducted by Irene Langmuir and Katherine Blodgett at General Electric.

In order to make the system more durable, the de-icing tests were carried in some as previously mentioned—a two-man test procedure.

► Porous Properties—Porosity of Pionair being 55 percent, de-icing fluid

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ELAFLOWE equipment used around the tail aircraft is shown in the photograph above. Sealed-in holes applying "Elflow" to the two types of panels may be seen at the right.

flow through it too fast. So the various features built into the face of the hose are also placed between the Formast and a corrugated backing plate. Fluid pumped through the backing plate is evenly distributed by the corrugations which it seeps through for channels in the backing strip rate to reach the air surface of the Formast panel. Local blockage caused by spot welding panels together does not cause uneven distribution, because the spray is small and rapidly action causes the fluid to flow over the obstructions.

Percent patching is now made in 6 ft widths but 12 in widths can be provided. Individual 12 in long patches are

assembled in six-foot lengths which can usually be fed by a single angle line.

The distributor panels, being only 811 in thick, do not change the steady state characteristics of the wing, according to the manufacturer. Adhesive is applied by the very simple method of manual spray. If incorporated into an integral design, Formast is tough enough to give a resistance equal to that of the surrounding structure, TKS says. A final, but important point, it adds in that resistance of Formast is "negligible."

It was not revealed whether BEA is looking to equip their entire fleet with this new deicing equipment.



Device Check Breaker Switches

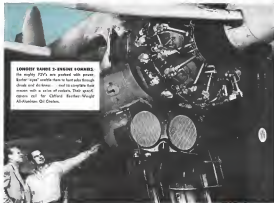
"Thermotronic" is a new device designed by the Pittsburgh-based Division to test operation of heater switches.

The unit provides a quick, inexpensive method of checking the entire and correct points of low line position and correct wiring and correct switches.

The Thermotronic consists of a

diagnostically controlled area, the last of which is coded between the high and low tolerance temperatures of the switches. A secondary type and flaking helps prevent instant observation of the performance of each switch in the area.

A separate circuit, known as a control to the operational structure of the switches.



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AND BELLOWES ASSEMBLIES



NEW AVIATION PRODUCTS



Kills Metal Fires

A powdered extinguishing agent developed specifically for fighting metal fires is being marketed by Anco Chemical Co., Manhattan, Wis.

The product, Mil-LX Dry Powder, is designed to smother fires by forming a crust over the burning metal. It is primarily effective on magnesium, sodium, potassium, zinc, powdered aluminum and other metals.

To permit use of the agent in gas-pressure extinguishers, Anco's engineers concocted a powder of small particle size.

According to this company, Mil-LX is the first extinguisher of the gas-pressure type designed specifically for metal fires. In addition, says the firm, it is non-toxic, repellent, free flowing and does not conduct electricity or deteriorate under normal conditions. The powder also is non-hygroscopic, will not recombine and is non-corrosive.

Extinguishers carrying the new agent are available in 10, 150 and 300-lb sizes.

The manufacturer emphasizes that Mil-LX is "in no way similar to the well-known Anco Dry Chemical."

De-Glaze Missiles

A new type of plastic finish, developed primarily to eliminate glaze of aluminum steel surfaces on guided missiles and other surface apparatus, has been announced by United Lingerie Mfg. Corp.

The finish, UR 248, "acts the part" of providing an effective coating that would adhere to the highly polished stainless steel used in various aircraft devices," says the maker. "Resists

of any good adhesive qualities. United Lingerie expects it will find other applications where elimination of glaze is an undesirable objective.

The material takes a baking temperature of 275 F. for one hour. It is available in all colors, in a semi-gloss or glass finish. Address: 1000 W. Elm Street, Los Angeles, 1, Calif.



Air System Alarm

A lightweight, compact and low cost air pressure warning device which can be attached to any compressed air system to whistle as alarm when the pressure drops below that required, is being marketed by Ardair, Elmhurst, Ill.

Designed for use with air shields, cleaning devices, treatment or control air systems and many other applications, the device is fully mechanical, automatic and completely self contained, no control to the outside. It says the unit is not readily susceptible to clogging and to assure proper functioning, requires no more than ordinary measures usually employed to keep foreign matter out of air systems.

Installed at almost any convenient location, the adjustable device automatically stops sounding when pressure is restored. While static in quiet, the amount of air consumed to speak, operates the meter. Only restoring outside air is a small amount of pressure to return the meter and body. Address: PO Box 13074, Houston 79.

ALSO ON THE MARKET

Weld Multiple Hole Punching System with new, interchangeable punch and die units permits arrangement of virtually unlimited hole-punching patterns. For repair and ease, units permit use of the same to be made outside the shop, at the job or even in the field. Made by Weld-Strapatt Corp., 345 Poplar Ave., N. Tonawanda, N. Y.

Goosnell drive combining Ship, laterally mounted motor and bearing and driving gear transmission will drive machinery requiring low range of selective

operating speeds and high initial load capacity. Made by Lima Electric Motor Co., Lima, Ohio.

Hand Indicator, Model KTH 15, with dial range of 0 to 1000 and 0 to 5000 gpm and accuracy of 0.1 of one percent over entire scale, has torque of only 0.40 oz. in. at lowest range. Made by Eppinger Controls, Inc., 100 Stevens Ave., N.Y. Yonkers, N. Y.

Electronic thickness gage for accurate and speedy measurement of its castings on finished plates has been developed by the Research and Control Laboratories of the North American Philips Co., 730 S. Federal Ave., Mt. Vernon, N. Y.

Midline-type gages, developed for use on wet, dry or cold applications, in cast-steel-substituted and non-springing Calor Composites, it's designed to run fully lubricated. Manufactured by E. F. Hagglobe & Co., 303 W. Lehigh Ave., Philadelphia 31.

Spun gun spacing reportedly at present cost of \$100 per unit, made by 20 to 175 psi air pressure unit designed to handle heavy industrial coatings. Special device in pump controls flow so that uniform coat is applied evenly to rigid surfaces. It will be made by C. C. Co., Inc., Canton Sq., Minneapolis 11.

"No Friction" universal joints, developed primarily for applications where uniform torque is required, must be designed rapidly, are available in single or double joint form. Parts come in sizes of 1/2 to 4 in. and longer, with solid or bored hubs and solid, keyed or splined shafts. They are made by Carter Universal Joint Co., Inc., Springfield, Mass.

Hydraulic grinder with universal wheel which works 150 deg. and mounts internal and external spindles, will eliminate need for dual work setups for internal and external grinding, say maker, Rust-Lee & Grader Inc., Brighton 13, Boston.

Welding output of Anchor Steel & Converter Co.'s not-out coupling described in last column Dec. 11 are 10 to 2500 in. D. longer, instead of 30 to 10,000 in. D. Inquiries as originally listed on the basis of erroneous information from a company announcement.

Drive unit of the Electrical Engineering & Mfg. Co. dual-motor machine described on this page Nov. 27 are 5/100 and 7/10 in. per second. The latter speed originally was listed as 7/100 in. per second. The latter speed is a correction from a company announcement.

PRODUCTION

Lightplane Producers Eye Future

With 1950 possibly shading 1949, market for personal planes looks strong—if priorities are available.

Advance year-end indications are that 1950 U. S. light aircraft and personal plane production will probably equal, and may exceed slightly, the 1949 figure.

An unofficial tabulation of planes produced during November showed an 11 month total of 5135, compared to a 1949 total of 5158 planes shipped by manufacturers. This left only 235 planes to be shipped in December to equal the 1949 total. Unlike 1948, when expected to be considerably higher than in 1949, due to prior shortages in planes.

Analysis of the indicated 1950 production indicates a healthy prospect for the surviving personal plane producers, since it was achieved in the face of strong handicaps in material and in assembly and equipment shortages.

But whether the total plane picture looks bright will be made to some extent by how these new demands touch on the National Production Authority, and/or its successor under the Office of Defense Mobilization.

Manufacturers are strong in the demand and equipment handicaps that at least three of the manufacturers have already terminated their personal plane production lines for shortage of the equipment, while a fourth company has terminated its line in view of existing orders now filled early in 1951. Except, Tempo and Luscombe have already announced closing of their lines. Both expect to wind up production of their long-planned business plane, the Super Navajo, with the completion of 150 units now on the books. These probably will be completed by February or March at the latest.

Cessna and Piper, strongest general producers in 1950, and in 1949 and 1948, are continuing their production of new planes, as are Beech and Aeronca. But Cessna is disappointed in the production of some models because of material shortages.

With a limited steady demand for business planes for executive and sales personnel and for other related uses, and with a continuing requirement for agricultural planes, indications are that the market for these types of planes, plus trainers and air taxis, will continue to be healthy and buoyant for at least several months. It is not certain if it will be as healthy and buoyant for the rest of the year.

Priorities Claims—Joseph T. Goring Jr., manager of the Personal Aircraft Council of Aircraft Industries Assn., recently made application to CAA as behalf of the manufacturers to act as a clearing agency for necessary priorities for manufacturers to continue in business building planes needed for executive, transport and industrial and agricultural use. CAA, in preparing an updated study of aircraft use to determine how many such planes would be required. With completion of this study, application is to be made to NPA for the priorities.

National Production Authority's last ruling accepts, to let its members for each production of any kind go but then for been irresponsibly low. This small plane manufacturers can expect a rough road to total before they can get even reasonable priorities, if the government of transport and agriculture manufacturers is not guided.

With engine delays, accepting its light airplane as a valuable emergency transportation against them will be a strong indication as to whether it is reasonable. National Production Authority will no longer indicate that it is not a serious situation.



PLATE LIFTER

Lifting bar is one of Consolidated Valiant's new design plate lifters. These 750-lb. plate lifters move safely than with hoists.

Sound Labor Plan Pays Off at Boeing

A "sounder, healthier labor-management relation" which permits pay raises to place emphasis on individual ability and accomplishment, has in 1949 the Boeing Employees Co. cut costs on its military airplane production program approximately \$45 million in the past two years, according to William M. Allen, company president.

The cost reduction has been passed back to the government in the form of price reductions on military C-97, C-119, and B-50. Total price reductions amount to more than 15 percent of the total of the four contracts involved for these two plants. Allen said the total amount to \$17.5 million on the C-97 and \$7.5 million on the C-119.

The labor-management relationship to which Allen refers dates back to a series of the Generalized Motors Union. This union declared itself, secured the company of a labor contract with strong security provisions.

PRODUCTION BRIEFING

Transportation division of General Motors Dayton has signed contracts with Hocking Motors to build 1947 aircraft for the military.

Grand Central Aircraft, Glendale, Calif., has finished manufacturing and modifying the last group of a number of C-41 and C-42 at Glendale and Fresno.

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Important among the characteristics of these Vickers Pumps are: (1) exceptionally high volumetric and over-

all efficiency, (2) very low weight per horsepower, (3) outstanding dependability and unusually long life. Other significant considerations were the importance of standardization and low overhaul costs.

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41M

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Negotiated Contracts

Hoffman Radio Corp., Los Angeles, has received awards totaling \$2,761,125 for radio equipment, as reported on the USAF list of negotiated contracts for the work ending June 30, 1948. Total awards for the period \$5,371,236.

Air Speed Tool Co., Los Angeles, oil, pneumatic: CI 174, \$94,000.
Aluminum Co. of America, Washington, D. C., aluminum alloy tubing: CI 15A, \$54,411.

American Merch Pump, Inc., Buffalo Creek, Mich., repair kits and pump assemblies: CI 15A, \$15,113.

American Plastics Corp., Chicago, steel-covered copper wire with plastic insulation: CI 166, \$10,800.

Auto Equipment Corp., Trenton & Enterprise, N.J., oil, pneumatic: CI 174, \$138,026.

Van Fleet & Sons, Nevada, St. J. type water pump, steel: CI 40, \$10,781.

Cisco Inc., Road Roller Mfg Co., Houston, oil, pneumatic: CI 174, \$11,350.

Cleveland Steel Sheet Co., Cleveland, steel containers: CI 43, \$49,408.

Conner Engineering Co., Columbus, O., lat: CI 17C, \$184,501.

Douglas Tool Co., Detroit, automatic profile shaping machine, \$122,425.

Empire Pumps, Inc., Buffalo, Aviation Corp., Detroit, St. J., engine piston assemblies for replacement on Air Force aircraft: CI 17D, \$26,900.

Etan, Inc., Jackson, Mich., motor amplifier and recording photo: CI 17A, \$103,140.

Fackell Aircraft Air, Fairchild Engine & Aircraft Corp., Hammond, Ind., lat for aircraft: CI 37B, \$100,000.

General Electric Co., Dayton, gasoline driven air engine: CI 17A, \$11,421.

General Electric Co., Schenectady, generator, tachometer: CI 62D, \$30,608, ball bearings: CI 64D, \$65,760.

Halliburton Co., Chicago, pneumatic adapter: CI 15A, \$15,057.

Hartshorn Propeller Co., Ticon, O., propeller blades: CI 33A, \$10,811.

Hoffman Radio Corp., Los Angeles, radio receiver transmitters: CI 18A, \$2,761,125.

Kelly-Roth Instrument Co., Cincinnati, radio set: CI 19C, \$14,413.

Wabco Kidde & Co., Inc., Bedford, N. J., radiator and valve, lat. engine parts: CI 107, \$17,208.

Leaf Mfg. Co., Inc., St. Paul, spare parts for engine mounts: CI 54E, \$449,916.

Metal Industries, Inc., Indianapolis, metal containers: CI 41, \$10,450.

North American Aviation, Inc., Tori air plane, engine modification kits, \$100,000.

Focus Products Inc., Ross Warner City, Bedford, O., engine mount parts for aircraft lat and hydraulic pump: CI 59, \$66,710.

Spencer Engineering & Sales, Corvallis, Calif., slusher: CI 15A, \$97,141.

U. S. Rubber Co., Milwaukee Ind., lat, lat cylinder lifting gear: CI 15B, \$17,208.

Walden Construction Co., Cleveland, oil, pneumatic: CI 15A, \$14,004.

Westinghouse Electric Corp., Erie, lat, lat cylinder: CI 15A, \$14,004.

Yale & Towne Mfg. Co., Stamford, Conn., spare parts for lat lat cylinder rollers: CI 19C, \$15,113.

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SALES & SERVICE



PIPER TRI-PACER shows off its new travel loading gear. All wheels on the same size.

Specifications and Performance

PA-22 Tri-Pacer

	125	135
Engine	Lyce 0-290-D	Lyce 0-290-D
Power and rpm	125/2600	135/2600
Gross weight, lb	1800	1800
Empty weight, lb	1000	1000
Span, ft	29.1	29.1
Wing area, sq. ft.	147.5	147.5
Length, ft	28.4	28.4
Height	8 ft. 4 in.	8 ft. 4 in.
Baggage capacity, lb	50	50
Fuel capacity, gal.	36	36
Top speed, mph	113	113
Cruising speed, mph	113	113*
Rate of climb, ft./min.	510	510
landing speed, mph	50	50
Service ceiling, ft.	14,250	15,500
Absolute ceiling, ft.	16,250	16,250
Fuel consumption, gph	7.7	7.3

* At 5000 ft. at 75 percent power

Piper Offers Tri-Geared Pacer

Piper Aircraft, one of the few remaining personal plane makers still working hard on chicken orders, introduced another 1951 model at the Miami Air Show—the tri-geared Tri-Pacer. (The other new Pacer was described in Aviation Week, Nov. 27, the new Super Cub in the Dec. 31 issue.)

Production of the new model is scheduled for March. Depending upon orders received—which will determine production rate—the plane will sell for between \$300-\$350 more than the current version models (which range from \$4995 to \$5255.00).

Piper has been experimenting quietly at Lock Haven, Pa., with tricycle land-

ing gear for a number of years—but up recently only recently has the company launched a systematic effort: paying the extra cost of such an installation.

The Tri-Pacer's nose wheel is hooked up to the rudder pedals permitting positive ground steering control. The rudder is interconnected with the ailerons allowing use of rudder as wheel alone in several flight. This linkage is by means of straps.

Tests run on prototype Tri-Pacers alone covered more than 4000 landings and 5000 mi. of flying, with most of the mid-air being handled as a single "wheel-based" aim of the field. Tiring speeds of 70 mph were attained

without reaching weaknesses in the gear. To provide ample stability in sharp turns at high speeds on the ground, the main gear track has been widened 12 in. compared with that of the standard Pacer. The tri-geared gear cannot be fitted to Pacers with conventional wheels.

► **Performance Still High**—The extra wheel makes for very little sacrifice in payload or performance. Empty weight is up 30 lb. The 125 (125 hp Lycoming) cruises at 125 mph sea-level, the 135 (135 hp Lycoming fitted with conventional pitch prop) cruises at 113 at 1000 ft. at 75 percent power.

The planes are covered with the Duralac berylate plastic non-flammable finish as on all 1951 Pipers.

CAB Reports on Private Crash

Lens of control of a Cessna BT-15 while flying into an overcast is given as the probable reason by Civil Aeronautics Board investigators for an accident which took the lives of both occupants and resulted in significant airframe damage to a private plane in Pasadena, Calif., last April. There was no evidence of mechanical failure in the plane prior to the crash.

Before taking off from Earl Lee Airport, pilot owner Nelson Lewis filed a flight plan under Visual Flight Rules, and had been advised by the airport manager to get a weather check because of dense or mist conditions in the vicinity of the field. Twelve minutes after takeoff, witnesses reported that the airplane had been observed spinning just below a 2500-ft. overcast. The airplane, apparently maneuvered from the spin about 400 ft. up, but then appeared to stall and crashed into the field.

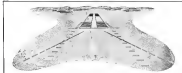
Examination of the pilot's second disclosure that he had about 180 ft. in right ascent and had no instrument rating, although the majority of his experience was in cross country flying.

BRIEFING FOR DEALERS AND DISTRIBUTORS

► **New Market—Connecticut** leads all other states in use of an autoland, having a market for each 99.2 sq. mi., compared with the average for the country of one for each 164.7 sq. mi. The leader has a total of 152 sqm.

► **New Parks Project—Pitts College of St. Louis University** has been appointed to conduct a study of West Virginia's future aviation program. Survival will be the state's main, to improve aviation service, additional feeder line and trunk lines, and airport expansion.

AIR TRANSPORT



APPROACH LIGHTS COMBINE attempts to meet Air Force demand for 100-ft. clear zone, pilot objection to display. This combination, proposed by Lt. Col. K. H. Kallberg, has never been tested.

100-Ft. Minimums Now in Sight

Combination of approach light system and electronic aids make lower ceilings practical, RTCA claims.

By F. Lee Moore

In Kallberg's opinion, the color of the CAA signalizer portion in white, the profile area in the approach area in red; the threshold bar and touchdown area bar are green, the middle section of runway lights is white and the center line section of runway lights is amber. Runway markings are black on white or white on black.

Although Kallberg's suggestion has been less fully tested, G. S. Colwell tried it out on his "darkroom" device simulating actual light phenomena. Colwell, speaking in his fellow RTCA members' words: "We cannot help testing the part of the runway with the green bar at part of the approach lighting system. Also, the first row in center runway. . . In fact, we agree with all your arguments but think that they lead straight to a (center) line and bar system."

Once again, all of this points up that no one system satisfies everyone, but only the Air Force close ones since it is inescapable with every system there is. While some people have blamed CAA for the lack of a standard system after all these years, the actual fault in approach light progress thus seems to be the Air Force.

•CAA Dilemma—CAA has been caught in the middle, with pilots demanding the continuous system and the Air Force pilots, people wanting an as absolute clear zone 1000 feet out from each end of the runway—whether that runway be 4000 feet long or 10,000 feet long.

approach light system is indispensable for lowering of present landing minimums and improving schedule reliability.

A true path to realize safety operations through 100-ft. ceiling, whether was agreed to the current security, but official reaction has been slow to follow it.

•Aerobor vehicle approach equipment has at last provided definitely reliable (a 100 ft. ceiling operation). It offers the nearest step toward the 100 percent operating factor ideal. The Radio Technical Group of American Association of Professional Engineers has approved a 100-ft. ceiling operation for the system that has the good side of a low minimum (Aviation Week Jan. 7).

•One approach lighting system is at present being used by several installations. The Flight Technical Group of International Air Transport Association has named the continuous high-intensity approach light system as the best, and recommended its installation everywhere (Aviation Week Dec. 10).

•Both Systems Needed—While some approach path such as United Air Lines has in its DC-4s and some DC-4s in the next step to top performance there must also be a third and a system of approach lights on the ground. The lights are not only a double check on the automatic approach, the pilot needs them for orientation and pace of mind.

Approaching the ground through unobstructed fog, the pilot needs an "external threshold." Beyond it, he has to go on until he can see the ground, for a believable representation of it.

Although the pilot knows the automatic equipment is reliable, he may be upset by the thought he is reaching straight at the ground while guided only by the electronic and servo mechanism of a small electronic robot in his plane.

Most thorough report on this twin between automatic approach, visual approach, and flight instrumentation is by Lt. Col. K. H. Kallberg, a former chairman of the Air Force Navy Civil Subcommittee on Visual Aids in San Francisco.

Although military pilots naturally can take more risks than airline pilots, Col. Kallberg makes a strong case for the approach light, twin with electronic approach system.

Kallberg's extensive study of the approach light need secured acclaim from such experts as William G. S. Colwell, founder of the continuing system, now in the United Kingdom.

•Combination of Study—Hart and Kallberg's conclusions, pointing to the

need of both civil and military purchase of a uniform approach light system, as well as airborne automatic approach gear.

•Emotional threshold of fear of the pilot must not be disregarded.

•Visual aids must accompany electronic aids, since critics of the basic informational equipment cannot be met by foreseeable electronic developments.

•Transition from electronic to visual control demands visual aids prior to that transition.

•"Visual approach equipment" in modern pilot airplane approaches means the visual aids must look as much like actual clearweather pictures as possible, to avoid uncertainty and too much going back and forth between instrument and visual conditions.

•Flight instruments must be well integrated with electronic and visual aids. Cockpit display should adhere to the "work elements" presentation principle and other necessary provisions at approach points and altitudes.

•Pilot must be trained to switch back and forth both easily and rapidly be-

tween visual and instrument approach.

•Configuration of lights is one of the only visual aids problems.

Kallberg's report states that enough testing has been done to reach a final conclusion on a standard approach light configuration. Such a selection, without further exhaustive testing, is justified by the critical demand for lights.

Current components are necessary, however, to get required in the central line of approach light system. It may be necessary to adjust obstruction criteria relating to clear zones (Air Force Subcommittee) and depth.

•New Configuration—To meet the Air Force requirement of a 1000-ft. clear zone at each end of the runway, Kallberg proposes a new combination of lighting system.

Since the existing study into the clear zone, Kallberg meets it. He knows the CAA dispute system to get the pilot has pilot path indication. But



"AIR EVAC" C-54M can be converted from cargo plane to carry 32 patients in comfort.

Comfort For Flying Wounded

Special C-54M modification designed for convenience of patients, has features adaptable to commercial use.

Military Air Transport Service has modified the first one of 16 "Air Evac" DC-4s being modified by Trans Engineering and Mfg. Co. for efficient evacuation of wounded soldiers. The new Air Evac plane, designated C-54M, has several improvements worth commercial airline attention.

Contract for the modification of the 16 DC-4s to MATS specifications was let last May. Deliveries should be completed by the end of March.

Patients now being converted by the Pacific Airlift Unit in liaison with almost no appropriate conversions.

Chief Air Evac modifications on the 16 DC-4s are:

•New heating and ventilating system is individually controllable from each entry in each plane there are 32 Ventilated fresh air, 36 to a side. System can be hooked up with ground air supplying either heated or cooled air.

•Exhausted white paint for fuselage top, supplied by Pittsburgh Plate Glass, has special heat reflecting qualities. Company has also furnished about 30 pieces of equipment window glass among other new equipment.

•New dust-free suspension system at

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CONVENIENCES for pilots in C-54s included weathering, control, repairs.

low a maximum of 18 inches between struts, at 14-inch maximum in the power plant.

- Revised oxygen system has outlets available in all quarters.
- Compact medical station combined with first aid service equipment allows the men recommended care en route.
- De-bagging system is built into the plane, connected to rid the ship of such at the tip of a switch to the cockpit. System reaches all compartments, including wind walls.

- Toilet is enclosed along with a special showering locker for bath use.
- New insulation by Fiberglas batts, covered by Slickly surface, absorbs sound, body odor, and moisture. Insulation of cabin is painted hospital green.
- Auxiliary power plant is moved forward and under the cockpit, to reduce cable noise while plane is on ground.

CAB Starts Special Operations Bureau

Colt Aeronautical Board Chairman Delmar Reitzel has decided to shake up his staff organization some more by setting up a new Bureau of Air Operations and liquidating the Bureau of Reconnaissance Operations.

The Bureau of Air Operations will handle all economic operating activities, including rates, routes, carrier agreements, reports and statistics. Part of the Office of General Counsel will go over to the new bureau.

Under the new plan, recommended by the private management consulting firm Ross, Allen and Hamilton, single items of CAB staff will handle the complete development, review, and presentation of each case. Reitzel hopes this streamlined system will eliminate wasteful duplication and unnecessary controversy and shuffling.

And the Office of General Counsel will now be freed from operating review of new handling. It will now devote more time to its primary function of counseling the CAB on legal policy.

Earlier staff changes made by Reitzel following the management study report include appointment of James M. Vernon as acting executive director of the Board to Supervise Staff Operations, and the naming of William Hart to fill this week with the personnel of the management consulting firm.

BOAC 1950 Record Indicates Busy 1951

More and more competition ahead for American flag carriers shows up clearly in the 1950 roundup of British Overseas Airways Corp. progress.

Here are some of the 1950 record plinkings of the nationalized airline:

- All planes are positive and punctual, following completion of first six years in 1950.

• First operating profit occurred in September when BOAC set a one-month record for passenger volume on North Atlantic routes, almost triple 1949 volume. With the government forcing some of the bells, operating profits may be enough to encourage further expansion of operations.

• New service introduced in 1950 ran London to Santiago, Chile via South America's east coast; London to Johannesburg via Africa's west coast, while frequency increases on routes from London to Tokyo, Cebu and Sydney, direct transatlantic service, New York to Mexico, New York-London nonstop flights began once a week in June 1950, were boosted to four a week by September.

Reggie: jet service starts this year or early next year with de Havilland Comets. Fourteen Comets and three 165-passenger Princess are on order. Present equipment in New York, London, Singapore, London-South America, the East, Australia, London-Africa, Hermet.

Traffic traffic the first nine months of 1950 averaged 100,000 tons daily in 1949 is 127 tons daily in 1950.

AA Starts Daily N. Y. Mexico Run

American Airlines this week started operating its new New York-Mexico City daily DC-6 flight—the "New York Teles."

Even before this flight was added, American was carrying three quarters or more of the daily traffic from north-central U. S. to Mexico City. In the CAB official traffic survey March, 1949, one American handled 1457 passengers New York-Mexico City, while the Eastern Air Lines and Pan American combination carried 294. In Sept., 1949, American carried 1366 passengers while the Eastern-Pan American combo carried 468.

The new flight leaves New York 7:45 a.m. and serves Mexico City 6:30 a.m. via Washington and Tulsa. Return flight leaves Mexico City 7:55 a.m. and serves New York 9:00 p.m.



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 <p>Model 1000-0 AS Approved ASA-110</p>	 <h1>Leach</h1> <h2>AIRCRAFT SALES</h2>

HLS Snow Plow

When blinding snow and sleet balked attempts of scraper crews trying to clear a straight landing strip at Allegheny County Airport one day last month, an airline pilot turned up with a new, effective solution.

Capt. William H. Riley, regional chief pilot of Capital Airlines, based as he is out on the field "on instruments" (visibility was less than 100 feet). Watching the weather needle on his H.S. 4s, travel slowly down the length of the runway—an error.

The program followed the surplus wheel tracks.

PAA Sets Low Fare On Alaska Cargo Run

Fighting back at competing airlines, Pan American World Airways has set a special passenger fare of \$75 round-trip from Fairbanks, Alaska, to Seattle, Wash., on its main line.

Regular Five-Axis flights: Fairbanks-Sentinel cost \$305. Nonscheduled charge \$45 and the good business.

Pennair's original plan was to charge \$75 on regular passenger planes for seats that would otherwise go empty at flight times Air Transport Associates, Inc., a rival, sought the PennAir plan. The board asked the Civil Aeronautics Board to veto PennAir's proposed special "when available" fare as below cost of operation. The

But when PanAm offered the 57% fare as its cage price only, CAB dismissed the would-be complaint:

ParkAir suggests that many who now pay \$65 on worked C-46s may ride its DC-4 for \$10 more.

Parsons' daughter is almost empty on its southbound trip from Alaska. So the \$75 passenger fare on the dead-head flight would be close, after paying the stewardess' wage plus cost of installing portable galvanized seats.

Braniff's DC-6s

Dornier International Airways has ordered three new DC-6s, at a cost of about \$1 million. These are standard DC-6 aircraft, with a few recent trimmings added.

Powerplants are four 2100-hp. Pratt & Whitney Wasp with griffon exhaust stacks. Payload at 3000-mi range is 52 passengers, crew of six, plus about 7100 lb. of mail and cargo.

Airline Income

Estimated 1950 total is nearly \$67 million for scheduled carriers.

Net operating profits of the scheduled airlines in 1998 are estimated at \$51,039,244 for the 16 domestic trunklines, \$476,680 for the 12 local service airlines, and \$15,261,858 for 15 international and overseas airlines, according to Air Transport Asia's director of research, Dr. Leong Sengul.

The industry grew an estimated 17 percent in passenger miles over 1999's, 12 percent in mail tonnage, and 28 percent in cargo services. Total over-the-road miles were 17 percent over 1999's, mostly in the form of more mail and express tonnage, while operating revenues were up 8 percent. (Shore's 12-month estimates are based on 10 months' consolidated traffic data. C. Michael Shores is a senior analyst at www.fleetcost.com.)

With revenues up 8 percent and expenses only 7 percent, net operating income jumped 47 percent. They're restricting the price leverage on airline tickets and expense accounts. But the 47 percent increase in profits will mean there's no carry-over investment to a modest 3 percent or less (based on a

► **Taxolines**—The 18 domestic taxolines earned their \$18 million on operating revenues of \$521,942,082. The income increase over 1990 was 187 percent, or more than double, while revenues gained 14 percent.

The operating ratio (expenses divided by revenues) in 1960 was down to 93.25 percent, compared with 94.64 percent the year before.

Mail pay average dropped to about \$1.04 a line mile, compared to \$1.16 in 1992.

Freighter revenues increased 14 percent to \$429,236,360, while mail increased only 7 percent to \$48,104,684. Express revenues went up 34 percent to \$11,959,387, while air freight gained 15 percent to \$13,874,347. Passenger mile receipts were down to 15 cents a mile, compared to 5.76 cents a mile in 1949. This shows the effect of coach service, as well as family fare, on

services, as well as family farms and other factors. In fact, although all classes of the milk receipts declined, operating income jumped almost 50 percent, perhaps pointing to chances of success in lowering traffic, a bet in D.

• **International**—The 17 international and overseas offices' profit of \$15 million was an total operating revenues of \$262,092,734. Income was down 2

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(See under section of Propeller Co.)

percent on a revenue decline of 4 per cent.

But rates have undergone considerable reduction, especially in passenger, express and freight traffic. Passenger volume increased modestly after the Korea War outbreak, and U.S. mail moved steadily throughout 1949. Freight mail volume declined slowly.

Express, Freight-Express and freight statistics have behaved erratically. Dr. Scull says: "There is some reason to believe that part of this tendency may be attributable to divergent statistical practices of the carriers in regards to payment of cargo to one at the other of these lines."

Revenue difficulty encountered in temporary and its establishment continued to plague the carrier. For 1949, CAB reports carrier estimates at over \$77 million, but a footnote to the CAB report indicates that the industry as a whole would be \$15,772,460. Says Dr. Scull of the "Should the latter become the fact for 1949, it is evident that most of the estimated profit for that year would disappear."

Industry for 1949 would wipe out most of the estimated profit of 15 million.

Freight Airlines—The 12 routes, or local service routes, earned nearly half a million dollars this year, compared with a net loss of \$442,695 in 1949. Total operating revenues in 1949 rose to \$17,140,194, an increase of 24 per cent over 1948 revenues.

Each carrier pays for the freight payment a substantial decline in mail pay dependence. Mail pay designed pays \$12.87 a ton mile in 1949 to an estimated revenue of \$12.13 a ton mile in 1948. Meanwhile, total operating revenues gained 34 percent to \$9,699,321, while mail revenues gained only 10 percent to \$1,415,065. But mail pay still accounted for more than half of total revenues.

Avianca Claims Air Freight Leadership

Avianca, the Colombian airline, claims to be the greatest air freight hauler. It transported 68,350,914 lb of air freight during the first nine months of 1949, a 75 percent increase over 1948.

To facilitate freight and express handling, the airline now has flat-bed Copter fleet service for saving cargo at airports.

At Bogota, Avianca's main base, the airline is installing a London-based truck manufactured by the Whiting Corp.

The London system will allow planes to be moved sideways as well from using to warehouse loading platforms to accept or discharge package cargo. Observers say this will greatly speed the loading and unloading process.

NAL Moves to Drop Pan Am Stock Pact

National Airlines President C. T. Baker has notified Pan American World Airways that his line "thoroughly cannot" the stock purchase option agreement made in the spring of 1949. But in a reply letter to Baker Pan Am President J. T. Toppie says Pan Am will not legalise the latter to cancel this contract unilaterally.

In his letter, Toppie notes Baker as follows:

"Our decision was attributed to loss of the position which you company has taken. They are quite at a loss to understand how we believe that National is in a position to be considered as liquidating the contract made by National, Pan Am, W. R. Grace & Co., and Pan American, in the spring of 1949, which the four companies have entered into previously by the CAB for approval and which the board has recommended in all other respects."

Under the agreement, Pan Am and Grace would acquire 48 percent of National.

If Baker sticks to his decision not to go along on the contract, Pan Am will probably appeal to the CAB. But right now, Pan Am is waiting for an answer from Baker on the legal grounds for his action.

SHORTLINES

► **Air Express**—Revenue from air express shipments is up and out of New York. Dec. 1-7, was \$142,699, 18 percent over last year. Number of ship orders was up 4 percent to 28,671-28,915 authorized, 90% cleared.

► **Air Line Dispatches**—Group is doing well in its operations with airplanes to get together within 100 miles before major controls may force the scale. Results of orders as reported, monthly demand of contract reporting orders, are (using second part of section as yardstick): Capital, \$15 a month; Coast, new units around year 1949, \$175; Trans-World, \$15 a month; the board, \$475 per month; Chicago & Southern, \$450 in third air route; service, \$475 in fourth.

► **Canadian Pacific**—Canadian DC-3s continued 1500 feet from top of 5900 ft. Miami, Chicago, Florida, passenger and pilot controls, but both pilot and co-pilot last have been changed over section.

► **Capital Airlines**—Company will buy on new planes this year despite fact it could use more Consolidation and



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Representatives in charge of production and maintenance operations can obtain information regarding these special aviation counter wrenches, and other special aviation tools, in quantity rates. Write.



Above is about the 30 piece Ferret Standard Set, as priced to \$29.95. Also, 1949 "1/4" 1/4", 1/2", 3/4", 1" and 1 1/2" sockets. 1/4" 1/4", 1/2", 3/4", 1" and 1 1/2" sockets. 1/4" 1/4", 1/2", 3/4", 1" and 1 1/2" sockets. 1/4" 1/4", 1/2", 3/4", 1" and 1 1/2" sockets.

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Super DC-10 Capital says that money to market reports, it has no definite buying plans for after 1973 company starts 1968 anti-airport construction service Atlanta New York Jan 10.

Continental Air Lines-Carrier is supplying a Borel postcard typewriter in all Canada/Borel flights for use by passengers for a trial period. Passenger holds machine on his lap to type.

KLM Royal Dutch Airlines-Carrier is decreasing 30 percent of its 1969 Dutch passport is necessary more by

Dutch government. Co-operating with KLM, Agip/Airbus is opening regular service, Buenos Aires-Amsterdam.

Nikkery Air Transport Services-MATS has cut 24 hours from Manila, P. I., to Dhahran, Saudi Arabia, by changing a right light cone at New Delhi, India.

New York Post Authority-Authority expects a big increase in bonded air cargo volume when 1969's new general order warehouse is completed, probably this month. Post Authority is

leasing space to the Manhattan Storage and Warehouse Co. for one year at \$520 per ft, and 12 airlines are negotiating leases for space in the building.

Northeast Airlines-Carrier has switched its regular Keros flights from Seoul to Pusan.

Pacific Northern Airlines-Alaska Inc.'s 1950 passenger sales were 46 percent over year ago, load factor of 51.5 percent compared with 49.2 percent for Nov. 1949. Passenger miles for 11 months 1950 are up 34 percent to 10,141,386, cargo up 15 percent to 1,295,794 lb; mail up 44 percent to 114,546 ton miles.

Renet Airlines-Fordair has bought two DC-4s from Chicago & Southern Air Lines. Final sale of the DC-4s to Renet awaits delivery to C&S of its new Constellation.

Slick Airways-Flight carrier submits November profit at \$170,000 on \$445,587 ton miles cargo. Profit for last several months was as follows: May, \$71,45; June, \$9,929; July, \$11,675; August, \$131,079; September, \$152,943; October, \$170,575; November, \$170,000.

State Department-Office of Transport and Communications Policy of State Department has agreed with the French Foreign Office to arrange "To have closer consultation and collaboration on mutual problems" and to cancel the dispatch of the bilateral air transport agreement. French are reported very worried about TWA and Pan American competition, now that both operate into Paris. Talks on this and other matters will be resumed later in the month.

Tetrahon Motor Transportation Inc.-Tetrahon Air Travel offers a new package air travel service by Air and Van families and friends. Package tour service includes insurance travel to airport, hotel accommodations, and airplane ticket for visit or one-way trip to military posts.

United Air Lines-UAL President W. A. Tetrahon predicts higher traffic volume this year than 1950's all time record. Basic reason: increased industrial activity and capacity, further gain in public acceptance of air travel, rising consumer income, stability of fares despite rising costs. Company expects for full 1950 passenger miles in 1,496,200,000-11 percent over 1949, with only a 1 percent rise in plane miles.

Company estimates total 1950 to gross per revenue per mile at 49.7 cents, compared with 59.3 cents in 1949 and 54.6 cents in 1948.

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EDITORIAL

WHAT KIND OF WAR WILL IT BE? Instead of drawing any conclusion on this question to the Air Force, Navy and Army are going to try to spend to prepare for it. The Administration still appears bent on trying to make up its collective mind as to whether there will be a war or not. Because the White House, the Defense Department and the State Department are still making less than all-out preparations for the worst. Defense Section Marshall several times has urged a "go slow" policy for the present, apparently to shield the country from economic mismanagement if war doesn't come.

The Administration says it wants to get the machinery ready but it doesn't want to press the button to start it. What is it waiting for? Apparently, war. If we do not take fullest advantage of the time we do have, we may not have as many buttons to push.

We think most citizens are ahead of their government in this huge matter of deciding whether to prepare for war. How much longer can we dare to take the chance of being surprised? What else does Russia expect but power and brute force? If the best chance of staying off war is to build up our own brute force, what are we waiting for, especially at a moment as a possible possibility of a war that we are not ready for. And this our own Administration has said, time after time.

Until the President, the Secretary of State, the Secretary of Defense, and a few others, decide that we are going all out to prepare our chances of survival, we shall continue to read reports like the one elsewhere in this issue by our legislative editor, Katherine Johnson. She writes:

"The Joint Chiefs of Staff haven't agreed as to 'war scenarios' programs on which to base their estimates. . . . The Defense Department doesn't expect to have a program in study enough shape much before spring to request a final supplemental appropriation. In the (former) 1951 fiscal year, and a 1952 fiscal year appropriation to implement it. Budget and Congressional clearance will take at least several weeks. Thus a program we are getting underway—a program admittedly needed since last Nov. 24 when casualties of Russia-equipped Chinese Communists in Korea killed the U.S. air wing up to the prospect of a major war."

Meanwhile, keep in mind as you wait and wait for news of all the aircraft orders, that the serious air staff on the more modest build-up program comes before the Korean services. The several supplemental appropriation bill, approved last week, supplements it.

So don't expect immediate action and don't put all the blame on Air Force efforts. Their own board hasn't told them what kind of war they must prepare for. Until the USAF gets a green light on what our world strategy is to be it can hardly know how many of what types of planes may be best to carry out that strategy. Obviously, the responsibility for determining some kind of program for survival is squarely on the shoulders of the President.

SOME OF THE HOT REACTION in the aircraft industry to the manner in which the Air Force commonly told us people which of their plans would be built by Kaiser-Frazer and General Motors has cooled. Fortunately, *Aviation Week's* editorial on this page Dec. 27 on Kaiser-Frazer being given the Fairchild Packet to build brought some angry words from the direction of the Pentagon and Kaiser-Frazer. Fairchild was given no notice for choosing a matter of greatest importance to the company. Neither was Mandy Paul, president of Republic, whose F-84 will be built by General Motors. He told our military editor, "I wouldn't mind having some production taken out of my hands if my advice on how best to do it were asked. Instead, I am told how, when, and where it will be done."

However, the quick response of the aviation press did seem to loosen Air Force people just how the matter was decided in parts of the industry, and *Aviation Week's* Editor, D. C. Ramsey met with Air Force officials. We are still informed, as originally, that the Kaiser-Frazer deal was initiated outside the Air Force, in Administration circles.

Two phone calls to the editor of *Aviation Week* were made by Edgar Kaiser, president of Kaiser-Frazer, thanking the editorial. He was offered space in this magazine for a statement. The offer remains open, any time Mr. Kaiser would like to comment.

Mr. Kaiser indicated that Fairchild Engine & Airplane Corp. had "gotten to" *Aviation Week* and said he had been told that in *Aviation Week's* Fairchild, whom the case in question doesn't, and in our readers well know, wouldn't be a letter in his own right. He said: "Mr. Kaiser and Gen. Woltz personally made the first call to Fairchild. He said that the new defunct Brewster Aeronautical Corp. and Fairchild, which Kaiser took over, had excellent war records under the Kaiser banner. We had and that K-F was now government approved for the Fairchild contract in 'less than 10 days,'" but Mr. Kaiser tells us it was much longer than that, although it now develops that K-F's Phase Two plans were for another plane, the B-47, and not the Fairchild Packet. Mr. Kaiser said he knew of no K-F production figures that had even been discussed with the Air Force or Fairchild.

We cannot feel that the past K-F record in aviation is outstanding. The Kaiser-Hughes flying boat partnership, the Kaiser relationship with the Wiley helicopter, the Kaiser-Hammond safety plane which never got beyond the prototype stage, and the Brewster and Fairchild operations aside: Kaiser offered no cost.

Mr. Kaiser did not appear to have read the last paragraph of the editorial in which we wished "the Fairchild Kaiser all at the best, for the sake of the country." That still stands too.

—Robert H. Wood

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